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THE WEEK'S NEWS

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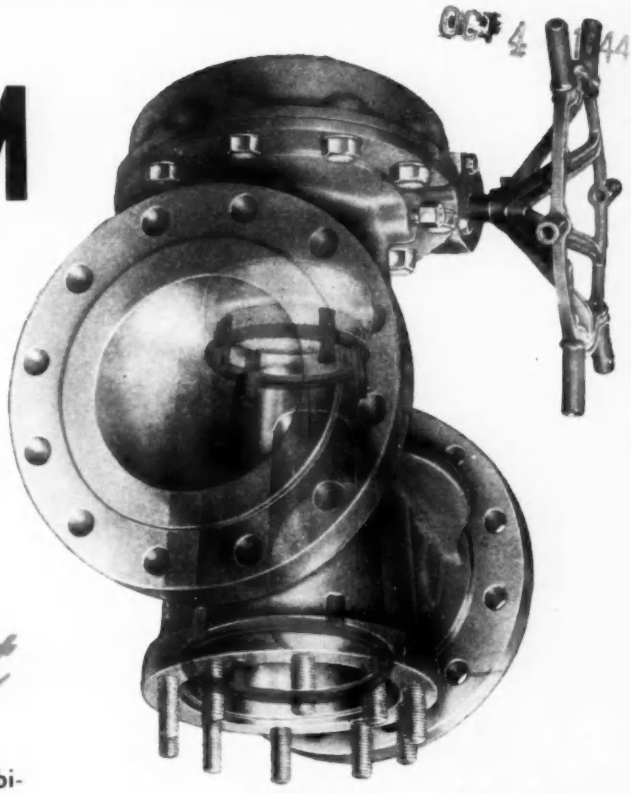

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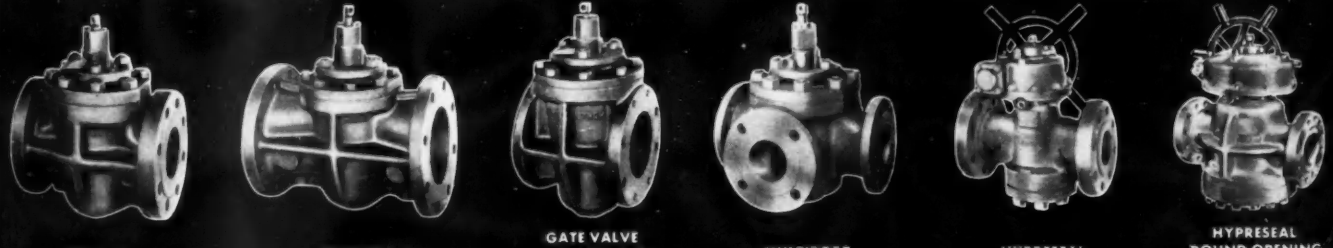

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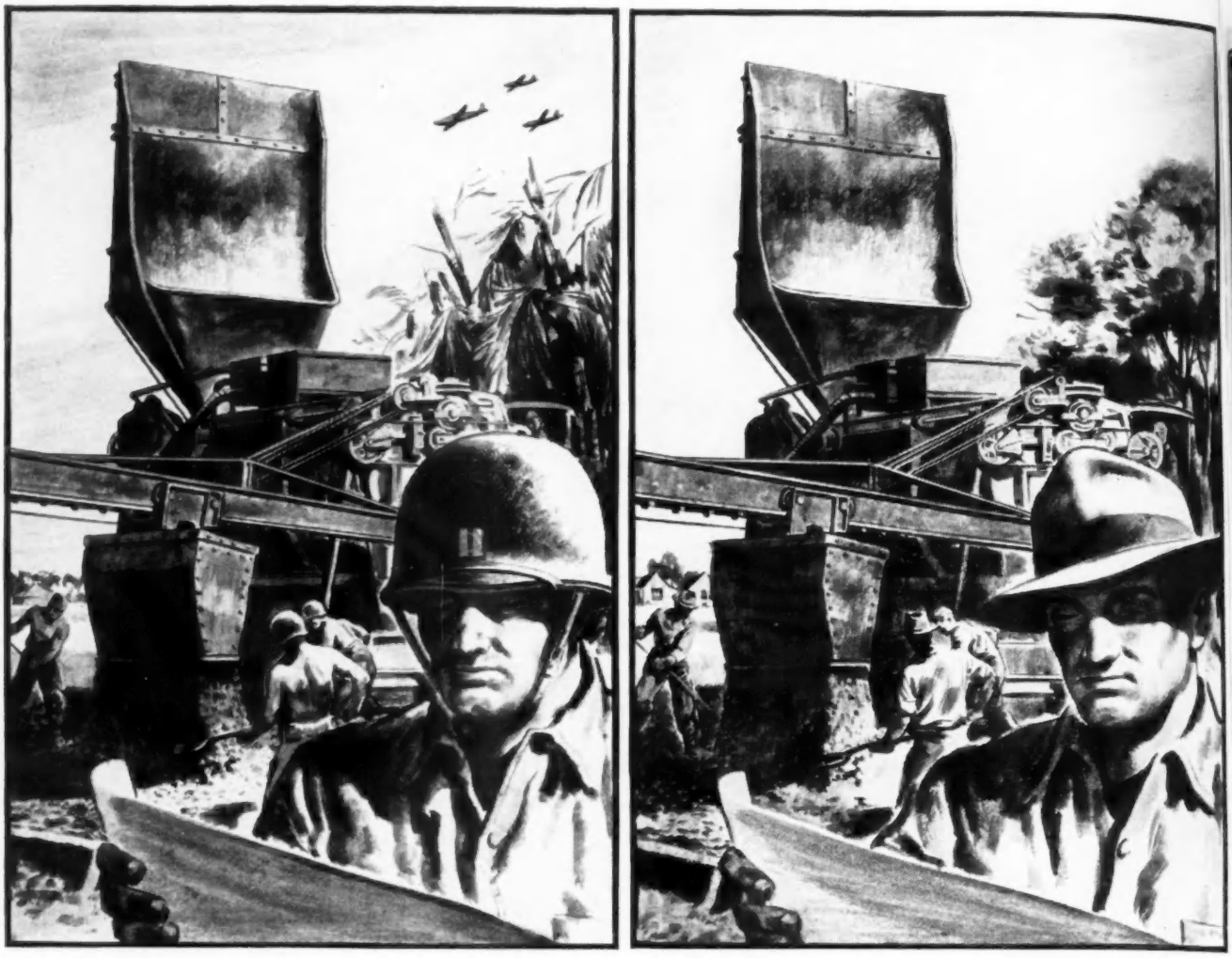

BRIDGING THE GAP to Peacetime Jobs... American Road Builders' Plan points way

Every day brings us closer to a most important wartime problem, *i.e.*, peacetime jobs for the boys who are winning the war.

The American Road Builders' Association has submitted a comprehensive plan for post-war roads and jobs. It calls for construction of needed new highways and improvement of the present United States highway system, including bridges and grade crossings. It would create jobs for millions of men.

3,000,000 jobs on highway construction alone. Millions of other jobs making and supplying machinery and materials. Jobs all over the country. Jobs that would pay good wages. Jobs that would greatly improve the America we love.

There's an inspiring 64-page booklet, "A SOUND PLAN FOR POST-WAR ROADS AND JOBS," prepared by the Association. Get a copy today. Write for it to The American Road Builders' Association, 1319 F St. N.W., Washington 4, D. C.

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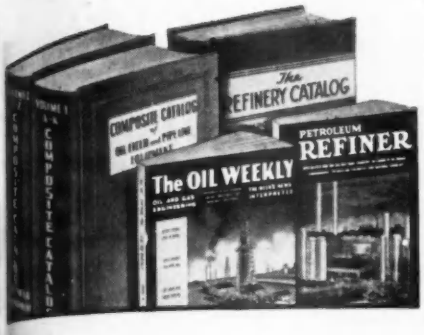

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LOOKING AHEAD
... with the Editor

HEAVING shale has blasted many a wildcatter's dream of finding oil. Also this troublesome stratum has meant untold worry to operators in oil fields throughout the coastal territory. For all in all, heaving shale has been among the most difficult of conditions to overcome in prospecting for oil. Millions of dollars have been lost through enforced abandonment of wells because this type of shale could not be drilled through.

Gradually however, science has come to the rescue. Various muds are now of great benefit in handling heaving shale and during the past few years remarkable progress has been made in conquering this shale that for so long could not be held in place by any means.

Recently one of the most interesting wells in the Gulf Coast, from the operational standpoint, was completed on the flank of the Hitchcock field, Galveston County, Texas. This project had the double handicap of heaving shale and high-pressure salt water, in spite of which the projected depth was reached. A complete account of the methods used will be published in an early issue.

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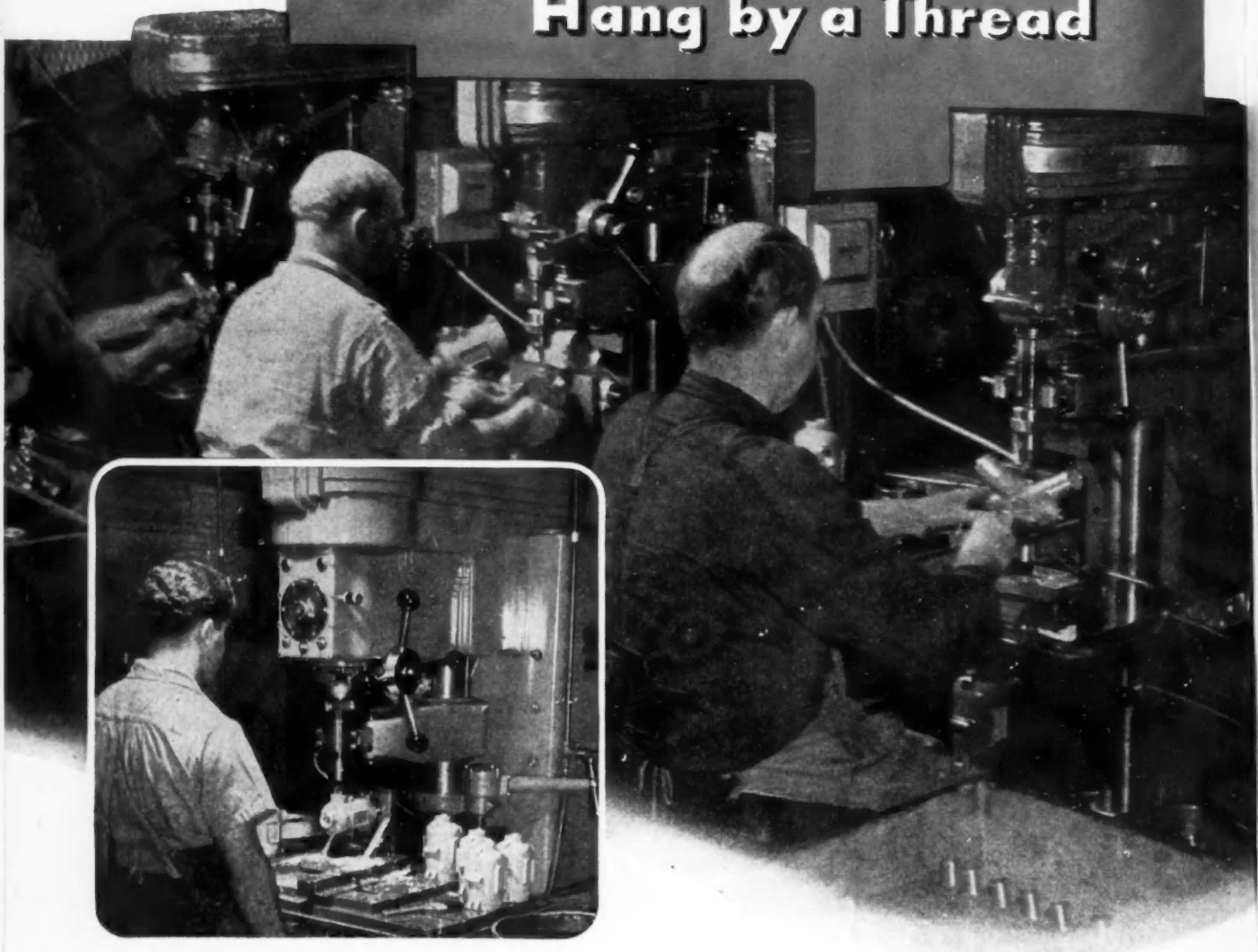
Battery of Warner & Swasey No. 11 Precision Tapping and Threading Machines, and (below) a No. 12 in the Dayton plant of United Aircraft Products, Inc.

When Production Levels Hang by a Thread



THE United Aircraft Products Company, Dayton, Ohio, with plants in California and Ohio, was one of the very first to use Warner & Swasey Precision Tapping and Threading Machines. Its production is almost exclusively aircraft parts held to strict specifications of the U. S. Army Air Corps. Tapping operations on hundreds of aircraft parts call for Class 3 thread fits, with tap depth held to within ½ thread.

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The Changing Panorama

Commendation for "Pony" Oil Weekly

LETTERS are now coming in to the editor from abroad telling of the arrival of he Pony Overseas Edition of THE OIL WEEKLY which was mailed out to former oil men in the services shortly after September 1.

One letter from Captain J. O. Hendrick, formerly with Dowell, Inc., in Oklahoma, says that his copy reached him in the South Pacific just 12 days after it was mailed from Houston. "It is a swell idea and a real treat," he says.

Lt. Charles W. Haas, somewhere in the South Pacific, says "Some of the production figures and developments are amazing. Being on this side and in an engineer outfit, I can see what a tremendous job the oil industry is handling . . . I'll be seeing you in the oilfields of Oklahoma before long."

Lloyd E. Pickering, former Chatham oil field employe (Lodi, Ohio), writes: "Being overseas two years doesn't give me much chance to keep up with the oil man's line. Any information helps me a great deal . . . I appreciate your 'Pony.'"

R. E. Fry, First Lieutenant, formerly with Stanolind, but now having a New Orleans APO, writes: "Pony Edition, THE OIL WEEKLY, No. 1, was placed on my desk this afternoon. Recognizing the familiar return address on the envelope I immediately hung my part of the war effort on the wrench to examine its contents. May I express my gratitude as a soldier for furnishing us such an edition disclosing brief and pertinent news of an industry so vital to our war effort and of which we are so proud. Subsequent editions will be eagerly anticipated and thoroughly digested as 'news from home.'"

Corporal T. M. Bledsoe, with the Marines at Quantico, thanks us with "no criticisms . . . it is a swell idea and a swell paper."

The Overseas Edition is a highly briefed edition of THE OIL WEEKLY, carrying no advertising, and mailed without charge to any man formerly employed in the production, pipe-line or supply service branches of the oil industry. If you have a friend or a relative who was doing such work before the war started and who is now in any of the armed forces, Army, Navy, Marines or Seabees, all you have to do is to give us his name, outfit and APO and the Overseas Edition will be sent regularly.

In the belt that sweeps around the roots of the Appalachians through Mississippi, Alabama, Florida, Georgia, and South Carolina, the area underlain by rocks of Cretacious age and under cover of younger geologic formations embraces approximately 155 thousand square miles, or over 10 percent of the entire area of the United States in which oil fields may be expected to be found.

—J. E. POGUE, Chase National Bank

"I Am An Oil Man"

(AN EDITORIAL)

RUNNING like a bright shining thread through the letters the editor of THE OIL WEEKLY has been receiving from oil men abroad in the armed services, in acknowledging receipt of an Overseas Edition of THE OIL WEEKLY, is the pride these men take in having been associated with the oil industry and in the accomplishments the industry is performing in the war effort.

It is no new thing—this pride in being an oil man. Most men who have wrestled with Mother Nature to take from her the petroleum which means so much in peace and war, are inordinately proud of being oil men.

Being an oil man has connoted real manhood, hardiness of body and mind, resourcefulness and a willingness to take risks.

We are reminded of the comment of a high Army officer who during early training days in Alabama, ran across an outfit composed principally of former oilfield workers who had performed some real feats of resourcefulness. "Where in H— did these men come from?" he asked, and their offcer, himself formerly attached to a drilling contractor's firm, replied, "Sir—these are oil men!"

Now many of these men are fighting your fight and mine abroad. Every land that knows combat knows them, too. We can well be proud of their record, because it is not in their record to malinger on the job. Fear is something foreign to them. A keen intellect and a desire to get the job done—those are characteristics which marked them in their peaceful pursuits before the war, whether in America or in oilfields of other nations, and the selfsame traits make outstanding their service in the armed forces.

Can we at home let down such men?

A Scheme or An Opportunity?

THE announcement by WPB's acting chairman, Julius A. Krug, that "our private economy has to carry the ball" in unwinding business into peacetime production and that it will be allowed to do this in its own way is being heralded by business leaders as a most important move. Admittedly, this is what should be done. All shackles on business should be done away with. This should result in a quicker and more stable return to normal conditions. However, this is so different from the past attitude of the administration, of which Krug is a longtime member, that one must wonder why the change.

The action is interpreted by some as merely an election eve political move to lessen the general opposition of business to the administration, and as actually meaning nothing after votes are counted in November. Undoubtedly, the forthcoming election materially influenced the decision.

It has been suggested that another reason for the action is the feeling on the part of the politicians that industry will not be able to provide *full* employment, and that the blame for failure will then be attached to industry, with the politicians stepping in when the clamor grows loud to "save the country" with socialistic plans financed with the taxpayers' money.

It may be that they do have such an idea in mind, but if industry has a fair chance to show what it can do, untrammelled by inhibiting red tape, the country is more likely to recover than would be the case otherwise.

Of course one of the hitches comes in an interpretation of "full employment." If "full employment" means every person in the country working, then this country has never known full employment in time of peace or war. After several years of heavy governmental spending for boondoogling, leaf-raking, dam-building, shovel-leaning, etc., under the aegis of the New Deal, there were still unemployed millions when the war began.

It is true that the job proposed for American private enterprise challenges the best efforts of several hundred thousand American business men. But the goal is worth the effort.

If it is proposed that business have an

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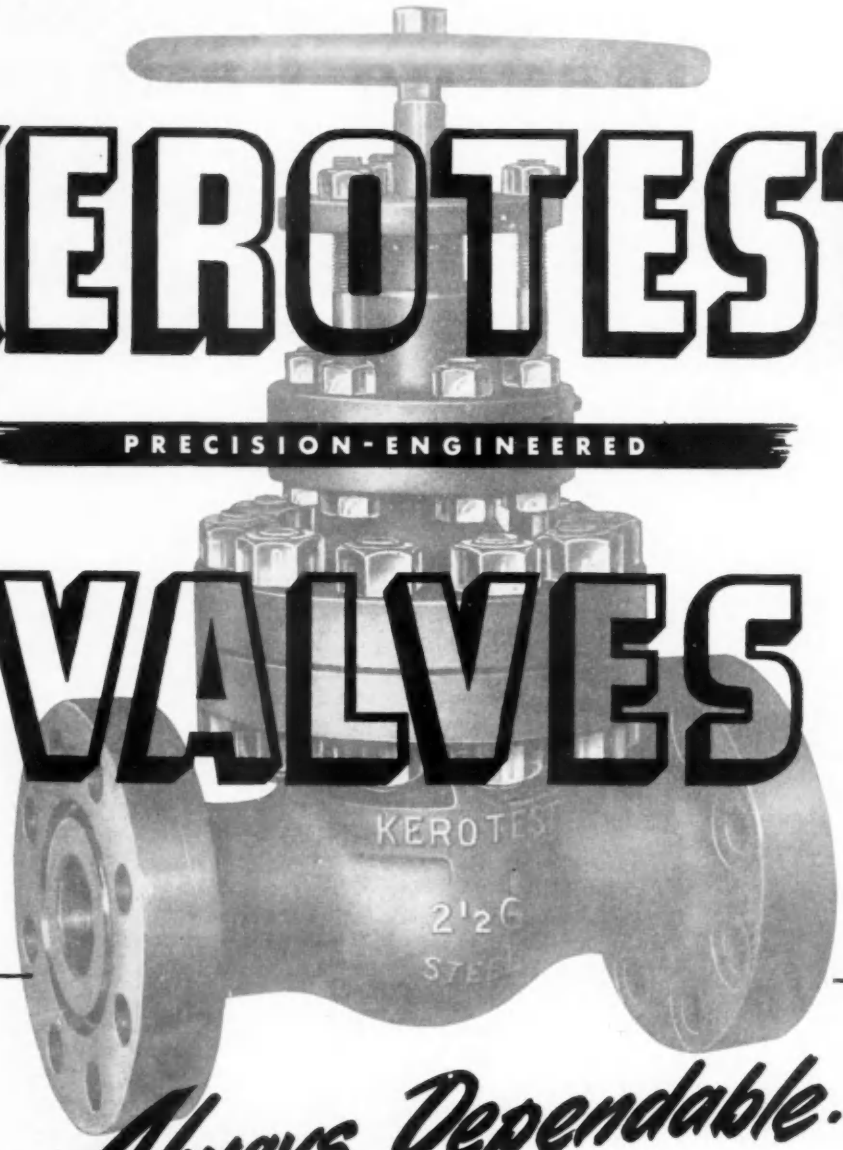

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honest opportunity to prove that it can employ men who really want to work, it should, and unquestionably does, welcome the prospect of the opportunity.

Road Funds Protected

BY A VOTE of four to one, the people of Maine ratified a constitutional amendment to guarantee that all automotive funds shall be used exclusively for road financing. Maine, according to B. H. Markham, director of the American Petroleum Industries Committee of the American Petroleum Institute, is the fifteenth state to adopt such an amendment dedicating gasoline and other automotive taxes to highways.

In five additional states, Connecticut, Kentucky, Nebraska, Pennsylvania and Washington, action has been initiated to submit similar constitutional amendments to the electorate. At the general elections on November 7, the voters of Nebraska and Washington will ballot on anti-diversion amendments.

"Diversion of automotive tax funds," declares Markham, "is a serious threat to highway progress in the United States . . . In 1941, the states as a whole diverted an amount equivalent to 60 percent of the total state funds spent on main state road systems in that year . . . The movement of the states toward constitutional safeguards to eliminate the diversion of automotive tax funds has unusual significance at this time, when the federal government is planning increased road grants to the states to stimulate expanded postwar road construction programs . . . Elimination of diversion would automatically provide to the states an additional $200,000,000 annually for road construction during the postwar period at present tax rates."

Standard Proration Basis Is Needed

WHEN it becomes necessary to reduce United States crude oil production rates to levels in keeping with peacetime requirements, the question of how these reductions are to be made will be a matter of utmost importance. It is time that some thought be given this question. Some sort of fixed standard on which to base whatever reductions are necessary appears highly desirable.

It has been estimated that it may be necessary to curtail United States crude production by as much as a million barrels daily below current peaks when all warfare ceases, and perhaps by a third of a million barrels in the interim between the defeat of Germany and the defeat of Japan.

Most of the impact will fall on Texas, it being the state which has shown the greatest wartime gain. This state has no standard basis for prorating production, depending upon purchasers' nominations and the reaction of its Railroad Commissioners to the pleas and data of field operators. Under this condition, a whole series of time-consuming hearings, at which there will be much bickering, appears probable. There will be many instances of dissatisfaction, and protesting operators will prolong the series of postwar adjustments between fields over a long period of time.

If some reduction plan, or some proration plan based on a standard basis were adopted, much of the controversy might be eliminated. Operators would have the advantage of knowing just where they stood, and it would remove politics from the picture. The standard might be the maximum efficient producing rate of a field as determined by engineers, although this would result in many differences of opinion, or it might be on a per well basis, or it might be on well depth. Almost any proration standard would appear desirable over a program that has no established fixed basis.

No Reconversion Problem Here

AS FAR back as June of this year, W. T. Holliday, president of Standard Oil Company of Ohio, while talking about reconversion, said that his company has no such problem.

The company, according to the president, which employs thousands of men in Ohio and elsewhere, usually has as many men in depression as in days of prosperity. Changing from war to peacetime operation will not alter this.

Jobs will be waiting for the third of Standard of Ohio's men when they return from the service. Naturally the company has felt the loss of these men, but it has been able to carry on and meet the varying conditions of the emergency.

For this company reconversion will mean merely the changing of a few valves and a few chemical formulas to adjust production problems.

It sounds incredibly simple when the matter of reconversion looms generally as among the most intricate of all the postwar problems facing industry. It speaks volumes however, for the stability of the company, as well as for the basic flexibility of the oil industry in our economy. There are doubtless many other oil companies in this same category. Maybe there is a suggestion here that other industries might do well to pattern their management and operations as closely as possible after some of our oil companies.

Brass Tacks On The National Debt

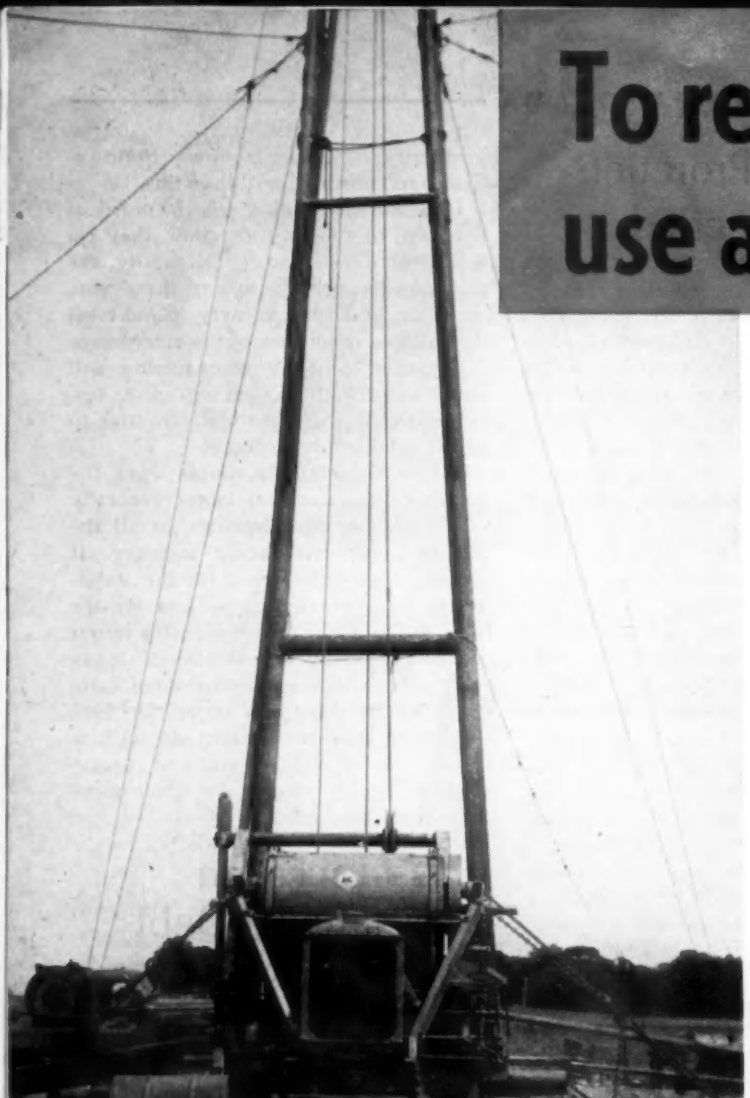
IF THE United States Government never spends another dime, the average Tulsa family of four people would have to pay $30.23 every month for the next 20 years to retire the present national debt, according to Bryant Millikin, statistician in the Priorities Department of W. C. Norris, Manufacturer, Inc., Tulsa. By simple mathematics, Millikin shows just what the national debt means to the average "Tulsa Joe" and his family.

Tulsa has a population of 140,000, and on the basis of a per capita national debt of $1,511.36, Tulsa's portion is $211,590,400. Figuring an average of four members per family, Tulsa has 35,000 families, and their per family share of the debt is $6,045.44. To retire this principal in 20 years would require each family to pay $302.27 per year. At an annual interest rate of 2 percent, the annual interest on a debt of $6,045.44 would amount to $120.91, but since the remaining principal would be smaller each year the average annual interest would be but half this amount, or $60.46. Therefore, if the debt is to be retired within 20 years, each average Tulsa family would have to pay as follows:

Per year principal.....	$302.27
Per year interest.....	60.46
Annual family payment..	$362.73

On a monthly basis this would amount to $30.23, which would have to be paid every month for 20 years—even if the impossible could be achieved and all government expenditures cease.

To really "Make Hole" use an A-C SPUDDER



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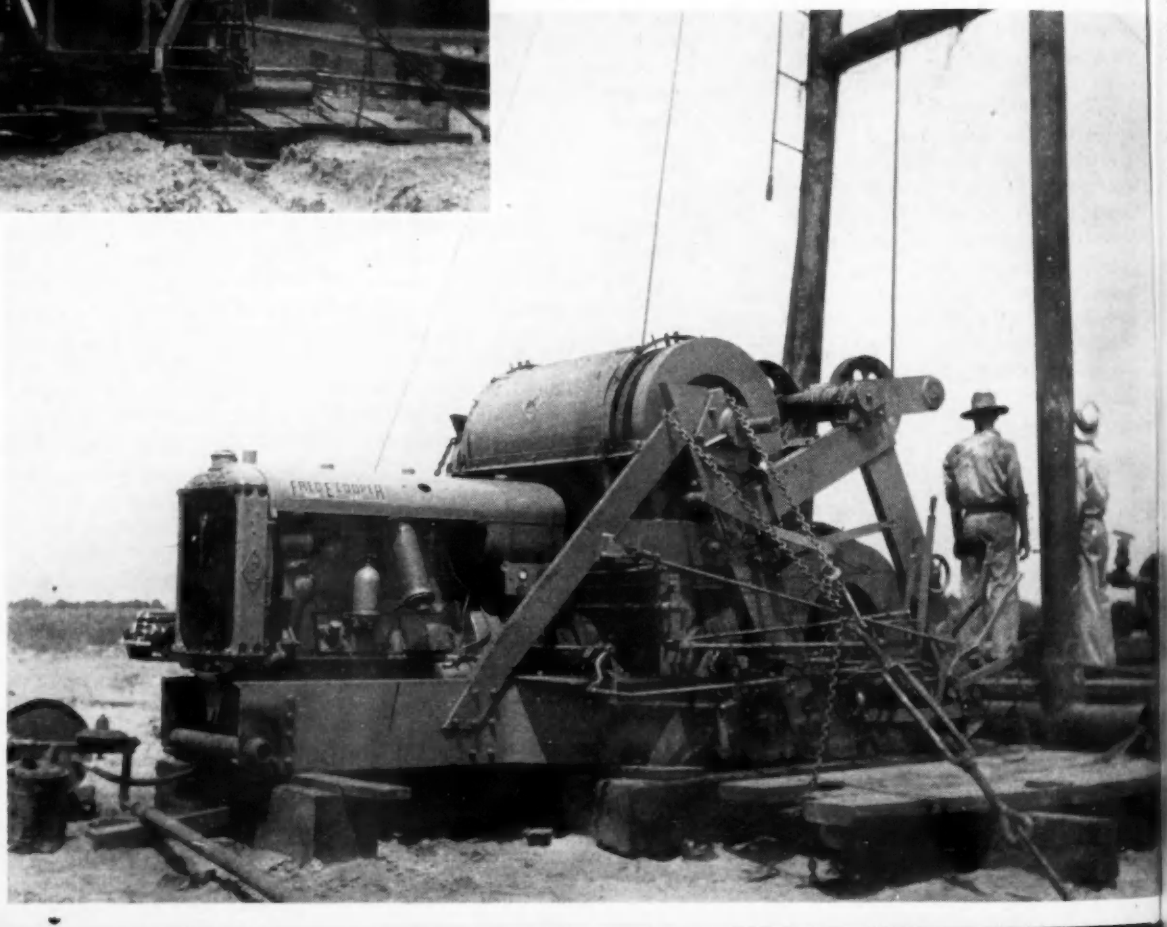

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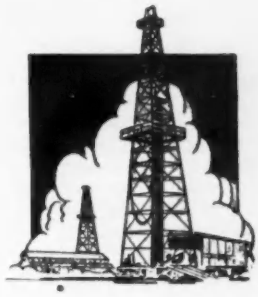

By BERTRAM F. LINZ, Washington Correspondent

WARNINGS that two years or more of war still lie ahead of the United States, with possibilities that gasoline rationing might not be lifted for some time after the end of the conflict in Europe, marked an otherwise quiet week in Washington.

Consensus on War's End—That the defeat of Japan will require a minimum of 18 months to two years after the collapse of Germany is the consensus of military and civil authorities in Washington, whose composite views were set forth in a report by the Office of War Information which showed that Nippon probably has gasoline and fuel oil enough to run her air force and navy for a considerable period after we crush her perimeter defenses and force the fight to her homeland. (See International, page 66.)

No More Gasoline Seen—At the same time, Administrator Ickes, decrying agitation for increased gasoline rations, warned that the end of the European war may reduce the demand for oil less than anticipated in some quarters, since it will be necessary still to supply large amounts for our armies of occupation, the movement of troops and equipment out of Europe, and the greatly expanded operations planned for the Pacific.

Gillette Protests Rubber Talk—Announcement by the State Department that the United States would participate in three-power studies of the problems of natural, synthetic and reclaimed rubber brought from Senator Guy M. Gillette of Iowa a strong protest against any action which again would place the United States at the mercy of other area for her rubber supply.

Natural Gas Investigation—An exhaustive investigation of natural gas resources, felt in some quarters to be long overdue, is about to be launched by the Federal Power Commission, which may open hearings on the question before the end of the year, after receiving from various interests their views and recommendations regarding the problems involved in control of the distribution of natural gas.

Maintenance of Blacklist—The "blacklist" of firms throughout the world which have given aid to the Axis will be continued after the end of the war by the State Department and the British government, and such concerns will not be permitted to participate in the trade of either country until their parent and associated organizations in the Axis countries have been placed under control.

Ickes Denies Reed Basis for Increased Rationing

Petroleum Administrator Ickes, recently returned from a speech-making tour, took time off from a feud he is waging with Governor Dewey to tell a news conference September 28 that Senator Clyde M. Reed of Kansas (incidently a Republican) was all wet on the gasoline stocks which he said were sufficient to permit a doubling of "A" gasoline rations.

Ickes pointed out that more than half of the reported stocks belong to the Army, that civilian gasoline inventories are only about 2,000,000 barrels above a year ago, and that consumption during the week ended September 16 was 86,000 barrels in excess of production.

"It is thoroughly mischievous for a member of the Senate, when it's difficult to keep consumption of gasoline down to a safe figure, to run wild with totally unreliable figures which, according to his interpretation mean that there is enough gasoline being run to double the ration," he said.

Hearing Continued

The Oklahoma Corporation Commission has continued until October a hearing on revision of oil and gas development regulations. Following a conference of officials and operators, committees which are studying the matter agreed that more time would be needed to make some of the suggested revisions.

FPC Seeks "Constructive Public Policy" Relating to Natural Gas

A full investigation of the nation's natural gas resources has been ordered by the Federal Power Commission as a preliminary to recommending to Congress possible need for further legislation which, in its 1940 annual report, it suggested might be necessary.

Copies of the order have been sent to the governors and the regulatory and conservation commissions of all states, the Interstate Oil Compact Commission, natural gas companies, and coal, railroad, labor and other interested organizations asking statements of their views and suggestions, all such material to be filed by October 31.

The investigation will cover "the extent and probable life of natural gas reserves; present and prospective measures for preventing waste and prolonging the life of such reserves; present and probable future utilization of natural gas for domestic, commercial and industrial purposes; extent, character and results of competition of natural gas with other fuels; and such related matters as may be helpful in the administration of the natural gas act or in determining what additional legislation, if any, should be recommended."

The commission pointed out that there has been considerable agitation in some of the gas-producing states for curbs on the export of natural gas to areas where other energy resources are available. Representatives of coal, railroad, labor and other organizations interested in the production or transportation of competing fuels also have strongly urged the denial of requested certificates of public convenience and necessity or the imposition of restrictions which would substantially limit the uses for which natural gas might be sold.

The major competition betwen natural gas and other fuels has been found to come in the field of direct industrial sales from interstate pipe lines, the rates at which such sales are made not being subject to regulation under the natural gas act. At the same time, it has developed that large investments have been made in plant facilities designed for the utilization of natural gas in industrial processes, and that the conversion or replacement of such facilities to utilize other fuels would require large expenditures of money, time and materials and might effect substantial changes in the method of operation, cost of production and end products of many industrial plants.

In its announcement of the investigation, the commission gave assurance that

it recognized fully the jurisdiction of the various state regulatory and conservation commissions regarding the producton, proration and distribution of natural gas in their respective states.

"It is not the commission's intention to trespass upon such authority in any manner whatsoever," it declared. "We seek the cooperation of the various state agencies, as well as other interested parties, so that every aspect of the public interest may be considered in an effort to solve the problems involved in our natural gas resources and uses.

"Extensive data and information relating to the problems involved in the conservation and utilization of natural gas have been obtained through proceedings under the natural gas act, but these data are not sufficiently complete for adequate consideration of the problems outlined in our order. It is necessary, for the purposes of this survey, to collect information on substantially all phases of the natural gas industry and, in order to avoid duplication, we plan to utilize the data and information already obtained by other federal agencies, as well as that in the hands of state agencies and others concerned with natural gas problems.

"We believe that such a cooperative survey will not only be productive of information needed for the administration of the natural gas act but will also develop constructive public policy in these important matters."

Maritime Commission Sells Two Large Tankers

Approval of the sale to National Bulk Carriers, Inc., New York, of two large tankers now under construction was announced by the Maritime Commission September 28.

The maximum estimated cost of the two vessels, exclusive of national defense features, will be $6,400,000, from which $710,000 will be deducted as a trade-in allowance on the obsolete "Pan-Virginia," a dry cargo carrier built in 1919 and converted into a bulk carrier in 1937.

The new tankers are of the Virginia type, 541 feet long with a speed of 16½ knots, with a carrying capacity of 210,000 barrels of gasoline. They are built by Welding Shipyards, Inc., Norfolk, Virginia.

Prices, Regulations to Be Topics at IPAA Meeting

Relaxation of government regulations, crude oil prices and international trade will be discussed by directors of the Independent Petroleum Association of America in Dallas October 9-11.

October 9 the committee of the whole will hear reports from President Ralph T. Zook and General Counsel Russell B. Brown. Election of the executive committee and officers is scheduled for October 11. State vice presidents and the executive committee will meet October 8.

Nebraska Deep Test

A 6000-foot test to test the Pennsylvanian sands has been staked by Sinclair Prairie Oil Company. The well is Delatour 1, CSW SW 33-19n-42w, Garden County, northeastern Nebraska north of Oshkosh.

Gillette Protests Conferences That Might Curb Synthetic Rubber Industry

Rubber problems foreseen in the post-war era are to be investigated by an "informal rubber study group" of Dutch, British and American experts, as an outgrowth of the exploratory rubber talks recently held in London, the State Department said last week.

The group, the department said, "will meet from time to time to discuss common problems arising from the production, manufacture and use of rubber, crude, synthetic and reclaimed."

Department officials explained that while studies will be initiated and possible solutions to rubber problems considered, the group as such will not formulate and transmit recommendations to the participating governments although the latter will be kept fully informed of the proceedings through their representatives. Arrangements are to be made for other interested governments also to be kept informed of the studies made and of the results of the discussions "so far as practicable."

Initial Studies Start

The initial program of studies, the nature of which was not disclosed, is under way on both sides of the Atlantic as a basis for future discussions, the department said.

Following the state department's announcement, Senator Guy M. Gillette of Iowa wrote Secretary Hull a protest against "any steps in the direction of again making our nation dependent on any foreign nation or groups of nations with monopolistic control of natural rubber supply, in whole or in part."

Intimating that he was expressing the views of the Senate subcommittee which has been investigating the synthetic rubber industry, of which he is chairman, Gillette pointed out that our rubber program has been developed to the point "where it would appear to be one of the great future industries" of the country and even now is supplying 95 percent of our supply.

"Witnesses before our group gave evidence that the former rubber monopoly was greatly concerned over the development of synthetic rubber in our nation and interposed many obstacles," he wrote Hull. "I fail to see just what the conference could discuss.

Aims Are Asked

"Do they wish to again be assured that they are to participate in the American market for crude rubber at the expense of our own synthetic industry? Do they seek trade policies which will assure them of a competitive position in that market to the disadvantage of synthetic rubber production? Or do they wish to furnish us a market for our production of synthetic rubber?

"In the light of our studies of more than 30 months, I am frank to say that I do not envision any advantage to our nation and her industries that would not be available to us without such a conference, and I can envision action which might result seriously in its impact on our own great new industry of synthetic rubber production from our agricultural sources and from our forest wastes and from petroleum products."

Petroleum Requirements Group Headed by Hochuli

Walter Hochuli, director of marketing, has been named chairman of the PAW petroleum requirements committee, succeeding J. Howard Marshall, who recently resigned as general counsel.

The committee, composed of representatives of PAW, War Department, Navy Department, War Production Board, War Shipping Administration, Office of Defense Transportation, Foreign Economic Administration, War Food Administration, National Housing Administration and Office of Price Administration, determines the requirements for oil products for military and civilian uses and recommends the allocation of the available supplies.

Ploesti Restoration Is Talked in Washington

With the fall of Roumania, considerable attention is being focussed in Washington on the possibilities of the Ploetsi oil fields, although as yet, apparently, little information has reached the United States.

The largest plant in the Ploesti area is American-owned, by Standard Oil Company, and the British have an interest in the field through the Shell Company, but, it is pointed out, the Russians are in possession.

In Washington it is believed Ploesti should be an important source of supply as soon as the facilities are put into shape, but it does not appear that the United States has yet been invited to participate in their restoration.

Operation of Southeastern Loop Lines Is Authorized

The Federal Power Commission has authorized operation by the Southern Natural Gas Company of loop lines from 10 to 22 inches in diameter and 697 feet to 27 miles long already constructed in Alabama, Mississippi and Georgia, and has ordered the company to complete its dehydration plant in the Monroe gas field this year.

Abandonment of 2 miles of pipe line near Bessemer, Alabama, which has not been used for several years, was authorized.

Opinion on Condensate and Distillate Taxes Delivered

Taxes on condensate and distillate shall be paid on three fifths of the gross value of all crude products where the same person produces and operates the plant, because the tax is a severance tax, according to an opinion prepared by Attorney General Grover Sellers of Texas. Many companies have heretofore paid on the value of the finished product.

If one person is the producer and another operates the plant, then the tax is on the value of the purchase price made by an "arms-length" contract.

One-Day Research Council Planned As Company's Anniversary Feature

An all-day forum on industrial research for large corporations and small business will be held in New York by Standard Oil Development Company, on Thursday, October 5. The occasion at which prominent scientists, government officials and business men will speak, features the 25th anniversary of the founding of Standard Oil Company (New Jersey's) research organization. Morning and afternoon sessions, luncheon and dinner meetings will be held in the Starlight Roof, Waldorf-Astoria Hotel.

Speakers will include Charles F. Kettering, general manager, Research Laboratories, General Motors Corporation; Dr. Frank B. Jewett, vice president in charge of research, American Telephone and Telegraph Company; Thomas Midgley, Jr., president of American Chemical Society; Harry L. Derby, president, American Cyanamid and Chemical Corporation; Colonel Bradley Dewey, former rubber director and president of Dewey and Almy Chemical Company; Warren K. Lewis, professor of Chemical Engineering, Massachusetts Institute of Technology; Edwin H. Land, president of Polaroid Corporation; Dr. Westbrook Steele, executive director of the Institute of Paper Chemistry; Dr. Earl P. Stevenson, president of Arthur D. Little, Inc.; Dr. Clyde E. Williams, Director, Battelle Memorial Institute; Dr. A. C. Fieldner, chief, fuels and explosives branch, United States Bureau of Mines; Frank A. Howard, president of Standard Oil Development Company; and Robert P. Patterson, Undersecretary of War.

Cases Involving Oil Confront Supreme Court

Sixteen cases involving petroleum are among the 500 appeals which faced the United States Supreme Court October 2, when it met for its 1944-45 term.

Five are holdovers, and the remaining 11 were filed during recess. None involves an industry-wide issue, several of them dealing with patents, and others with public lands and oil and gas leases.

Cases held over were McCullough v. Kammerer Corporation, involving the patent on certain oil well apparatus; Halliburton Oil Well Cementing Company v. The Dow Chemical Company, patent; Choate v. Commissioner of Interal Revenue, federal tax on sale of oil and gas lease; Underwood v. Ickes, Secretary of the Interior, public lands; and Coffee v. Shamrock Oil and Gas Corporation, oil and gas lease.

New cases brought to the court during the summer include: Greene v. Commissioner of Interal Revenue, federal tax on oil and gas leases; Standard Oil Company v. National Labor Relations Board, substantial evidence; Magnolia Petroleum Company v. United States, pipe-line tax; Coyne v. Simrall Corporation, oil and gas lease; Saulsbury Oil Company v. Phillips Petroleum Company, oil and gas contract; Phillips Petroleum Company v. Saulsbury Oil Company, oil and gas drilling contract; Panhandle Eastern Pipe Line Company v. Federal Power Commission, rate reduction; Sinclair Refining Company v. Coe, commissioner of patents, patent on oil cracking device; Fairchester Oil Company v. First National Bank of New Rochelle, lease cancellation; Jordan v. Ickes, submerged oil lands; and Baker Oil Tools, Inc. v. Crowell, device for well casings.

Rehearing Held on Hawkins Daily Allowable Revision

Rehearsing to consider revision of the method of allocation in the Hawkins field was held last week by the Texas Railroad Commission. Humble Oil & Refining Company claims that it has 76 percent of the oil in place in the field, and has insisted on a proration order which will permit it to produce that proportion of the daily allowable. The plan was opposed by townsite operators with small tracts.

After a hearing in August, the Commission entered an order increasing Humble's share from 66 to 72 percent.

This is the first instance of proration based on reserves, upon which any operator has insisted. If Humble is successful, then the method of allocation for many Texas fields might be revised, and allowables of new fields discovered in the future might be based on reserves. In the event the commission makes no change, the Humble Oil & Refining Company likely will take the case to court.

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED Sept. 30	Sept. 23
Alabama	300	350
Arkansas	81,050	81,350
California	890,000	865,750
Colorado	9,150	9,450
Florida	50	50
Illinois	210,400	194,800
Indiana	12,750	12,200
Kansas	277,400	280,900
Kentucky	24,600	24,400
Louisiana	362,950	363,000
North Louisiana	74,550	74,600
South Louisiana	288,400	288,400
Michigan	50,000	50,100
Mississippi	48,950	49,000
Missouri	100	100
Montana	23,310	22,600
Nebraska	600	600
New Mexico	106,100	106,100
New York	13,250	13,600
Ohio	7,550	8,500
Oklahoma	343,400	342,900
Pennsylvania	39,400	40,000
Tennessee	35	35
Texas	2,156,050	2,156,050
Upper Gulf Coast	543,000	543,000
East Texas Field	370,900	370,900
Rest of Eastern Texas	149,800	149,800
Lower Gulf Coast	243,250	243,250
Southwest Texas	79,050	70,050
South Central Texas	19,300	19,300
West Texas	504,150	504,150
North Texas	147,850	147,850
Panhandle	98,750	98,750
West Virginia	8,250	8,800
Wyoming	101,550	98,850
Total United States	*4,767,195	4,729,485

* New all-time peak.

War Veterans Not Bound By Employment Regulations

WMC Chairman Paul V. McNutt announced September 26 that veterans of the present war, both men and women, except those receiving dishonorable discharges, will not be required to secure or present statements of availability in order to change jobs and may be hired by any employer without referral by the United States Employment Service or other authorized channels.

Any veteran of the present war who seeks employment through the USES will be entitled to a referral, as a matter of right, to any job of his choice, without regard to the essentiality or priority status of such job.

Kingfisher County May Be Part of West Edmond Pool

West Edmond developments have resulted in increased leasing activities in Kingfisher County, Oklahoma, which some geologists believe will soon be a part of the pool.

Northeast of Kingfisher, Gulker Realty Company has transferred a large block to L. O. Pulliam and H. B. Sears of Oklahoma City. The block lies in the east central part of township 17n-6w, northwest of a block owned by several major companies. Trading has increased in Kingfisher County during the past 60 days with activities centering in townships 17 and 18 north, ranges 7, 8 and 9 west. In the north part of township 18n-9w Atlantic Refining Company owns a large block with Cities Service Oil Company, Sun Oil Company, Sinclair Prairie Oil Company and Magnolia Petroleum Company holding considerable protection acreage in the general area, which is in the Anadarko Basin.

Hugoton Gas Pool Producers To End Under-Production

Producers in the Hugoton gas pool have been authorized to clean up underproduction during September following an order issued by the Kansas Corporation Commission. Demand for gas from the pool during September was estimated at 7,609,919,000 feet but the commission found that as of August 1 there was underage totaling 321,655,000 feet. Under-production was given preference in the order and the remaining 7,288,264,000 feet was allocated to other wells in the pool. There are 348 producers in the Hugoton gas field with 13 having no pipe line connections.

Committees Dissolved

Having completed the task of making minimum wage regulations for which they were set up, the industry committees appointed by the wage and hour division of the Department of Labor under the Fair Labor Standards Act of 1938 were ordered dissolved September 25 by Administrator L. Metcalfe Walling.

Included in these committees were groups for the manufacture of petroleum products and for the petroleum and natural gas extraction industries.

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P. E. NOLAN, chief geologist of Mene Grande Oil Company, C. A., will return next week to Caracas, after spending seven weeks in the United States on a business and vacation trip.

Oil Industry to Benefit from Wartime Developments, Frank Phillips Believes

Development of petroleum by-products which has necessarily been stepped up by urgent war demands, will serve as a peacetime cushion to absorb the shock of reconversion in the petroleum industry at the conclusion of hostilities, in the opinion of Frank Phillips, chairman of Phillips Petroleum Company. Because so much of the chemistry of tomorrow will be based on oil and gas, hydrocarbons available in almost unlimited quantities, the oil industry faces a more promising future than ever before in its history. From these hydrocarbons will be manufactured some of our most valuable industrial materials, Phillips pointed out.

"While the oil industry came of age following the last war and directly contributed to the vast industrialization of the nation as a result of technological advances, we may safely predict that the industry, at the conclusion of the present conflict, will have attained its prime and will be in a position as never before to contribute to the advancement and prosperity of all peoples throughout the globe," he declared. "Directly and indirectly it will be a factor in providing gainful employment for our forces returning to civilian life.

"I am not impressed by the worries of those people who would have us believe that the oil industry will be depressed by the collapse of war demand and the inability of peacetime demand to quickly cover the loss. Recovery of peacetime demand is partly a question of speed with which cars and tires will be produced. I have continually expressed my belief that American manufacturing 'know-how' will produce cars and tires in larger volume and more quickly than most people think. This faith has been confirmed by recent announcements that new automobiles will be for sale within 90 days after the industry gets the go-ahead sign."

In Phillips' opinion, the rapid production of new cars is only one factor in the quick recovery of peacetime demand for petroleum products. Gasoline, he pointed out, is not the dominant money product it once was. There are also fuel oils, natural gas, synthetic rubber, petroleum chemicals and many other items, "the demands for which hold great postwar promise and assure an unusual degree of stability." Through the science of chemistry the oil industry will be able to take up the slack during the reconversion period, he believes.

Chemistry in Refining

"In this connection the research, so far, of a majority of the oil companies has been restricted primarily to the manufacture of fuels and lubricants from petroleum, with the result that the majority of new processes developed in recent years in the refining industry have been based on chemical reactions," Phillips continued. "Obviously the introduction of chemical knowledge in refinery technique will have a tendency to intensify the interest of refiners in the manufacture of chemicals, and there is an abundance and variety of chemical raw materials obtainable from petroleum. We recall that during the first World War research established in this country the foundation of the manufacture of dyes, an industry controlled by Germany up until that time.

"Many of the hydrocarbon raw materials available in the petroleum industry are in effect by-products of the many processes which are used by the refining industry, and for this reason they are ordinarily cheaper than raw materials from other sources. These factors will be important considerations in the further development of chemicals from petroleum.

"I have heard it predicted that after the defeat of Germany and Japan the oil industry will be faced with a drop in military gasoline demand with consequent overproduction of crude and overcapacity of refineries. This prediction overlooks the facts that many oil fields are producing at wasteful rates, that crude inventories are below minimum levels, and that much of our refining capacity is uneconomic under peacetime standards. Let us not ignore many factors that will play an important role in stabilizing the oil industry after the war."

Phillips listed these as: the resumption of war-interrupted extension of natural gas pipe lines; uses of fuel oil accelerated by wartime expansion of our Navy and Merchant Marine; greater use of diesel fuel because of the many important war-developed uses of diesel-powered equipment; and a much larger peacetime use of petroleum products for aviation.

Oil Not a Gamble

"Nothing is further from the truth than an impression that the oil business today is a game or a gamble," he asserted. "The automobile industry is one of the cornerstones of our nation's economy. Yet the car makers annually contend with the great uncertainty of meeting popular favor with new models. If a model fails, the manufacturer cannot try again until the next year rolls around. By comparison, the widely diversified activities of a great oil organization have so any thousands of separate operations that ventures which fall short of expectations are offset by others which produce better than expected results. To be sure, world-wide booms and depressions affect the oil industry, but only in the same manner that they affect all industries, companies and persons.

"In the rush of fighting the war, with miracles performed in every direction, it is easy to accept vital changes as commonplace occurrences. To my mind, the wartime developments in the oil industry will greatly improve its future stability.

"There is no business more stable than an oil company with ample natural resources, diversified operations and capable management."

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T. D. BAILEY, petroleum engineer with the Oklahoma Corporation Commission, discussed drilling and completion problems of the West Edmond Field, Oklahoma, before petroleum engineering students of the University of Oklahoma September 26.

Continue Lend-Lease Until Japs Beaten, Urges FDR

Continuation of lend-lease until the defeat of Japan was urged by President Roosevelt September 29 as he ordered the Foreign Economic Administration to speed plans for economic controls to be applied to Germany after its defeat.

The lend-lease program, which will expire June 30 unless Congress extends it, was declared by the President to be essential "to enable the combined strength of all the United Nations to defeat our common enemies as quickly as possible with the least loss of life."

The amount and nature of the aid necessary after the defeat of Germany is closely tied up with the strategic plans for the Pacific war, he said.

Roosevelt called on the FEA to relax controls over exports as greatly as possible after Germany's defeat, with a view to encouraging private trade without interfering with the war against Japan. In his instructions, contained in a letter to Administrator Leo T. Crowley, the President warned that no unnecessary surpluses should develop out of procurement by the FEA for lend-lease, UNRRA or other purposes.

Holley Poe Cannot See Big Lines Carrying Gas

Conversion after the war of either the Big-Inch or the Little Big-Inch war emergency pipelines for transportation of natural gas from Southwestern fields to Eastern industrial centers was thought unlikely by E. Holley Poe, former executive vice president of the government's Petroleum Reserves Corporation. He couldn't see the conversion "based on status of the markets, problems of regulation and taxes."

He said the 20-inch line might be adapted to the movement of natural gas but "in my judgment it would be difficult to convert that line with sufficient pressure to deliver a quantity of gas to the East." He remarked that he had no opinion on the 24-inch line but added: "I can't see the necessity for it at this time nor for the near future."

Poe said that completion of the Tennessee Gas & Transmission Line project in October will probably alleviate part of the shortage of natural gas in the Appalachian area.

Stripper-Well Subsidy Date

Subsidy certification of three new pools as eligible for the stripper-well subsidy was announced by the OPA September 28.

The OPA authorized payment of 25 cents per barrel subsidy for crude from the Brown pool, Cowley County, Kansas; 35 cents for Geneva pool, Van Buren County, Michigan, and 20 cents for the Powell Pool, Navarro County, Texas, effective October 1.

It was disclosed that all certifications from now on will be effective on the first day of the following month and that plans to make payments certified up to the 10th retroactive to the first of the month have been abandoned because of the opposition of Defense Supplies Corporation to retroactive payments.

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C. F. KIMMELL, scout and landman for Gulf Refining Company in Illinois, has joined Bell Brothers at Robinson, Illinois. He is succeeded by William T. Johnson, who has been transferred from Mattoon, Illinois, to Evansville, Indiana.

Limited Premium Gasoline Output Is Slashed Again

The current limited output of premium gasoline has been ordered reduced by 50 percent by PAW as a result of the loss in production of tetraethyl lead resulting from an explosion and fire in an important lead manufacturing plant in Texas.

Other lead producing facilities, operating at maximum capacity, will be unable to absorb the estimated loss in production, it was said.

The tetraethyl lead situation has been deteriorating for some months, due to increasing demands for 100-octane aviation gasoline and, in June, PAW called for a cutback in the output of premium gasoline of approximately 60 percent. In July, PAW ordered housebrand gas degraded from 72 to 70 octane, and in the same month cut the production of premium gasoline west of the Rocky Mountains to 45 percent of output during a base period of three months preceding June 1.

As a result of the latest order, the production of premium gasoline east of the Rockies will be reduced to 25 percent of that produced for civilian use during the six months preceding last April 1, and west of the Rockies to 22.5 percent of the output during the three months preceding June 1.

Blacklist of Firms Will Be Maintained After War

Business concerns in non-enemy countries which have been blacklisted by the United States and British governments because of activities in aid of the Axis will not be restored to favor at the end of the war and may be barred from participation in American and British trade for some time thereafter, the State Department said last week.

Announcing determination of the two governments to continue the "proclaimed and statutory lists" after the cessation of organized resistance in Germany, the department explained this to be required "in order to permit the Allied governments to deal properly with firms which have been part and parcel of the Axis effort to gain world domination."

"Many of these firms," the department said, "have been controlled from Axis territory and have been utilized as instruments of the Axis war machine."

Continuance of the control over these Axis subsidiaries will supplement Allied control of the head offices of the firms in Germany until adequate measures are taken to prevent their further utilization as instruments of Axis policy.

"It will also be necessary to continue on the lists those firms that have sold themselves out to the Axis through their desire to make temporary exorbitant profits at the expense of the cause of democracy," it was stated.

Spacing Change Approved

Approval of 20-acre spacing in the new Lone Grove Southwest pool of Garvin County, Oklahoma, recently discovered by The Texas Company, has been tentatively given by the Oklahoma Corporation Commission and another hearing is due in November when the final order will be issued. The pool produces from a series of shallow, Pennsylvanian sands.

Gets PIWC Post

B. BREWSTER JENNINGS

Jennings Takes Place of John A. Brown on PIWC

B. Brewster Jennings of Socony-Vacuum Oil Company was named last week by Administrator Ickes to be a member of the Petroleum Industry War Council, succeeding the late John A. Brown.

Jennings, who was named Socony-Vacuum president September 9 to succeed Brown, returned to his company only last August after a two-year leave of absence when he served the War Shipping Administration. While in Washington, he was a member of the petroleum board, which coordinates the policies and programs of government agencies that directly and indirectly affect the production, distribution and use of petroleum products, and was also a member of the Petroleum Supply and Distribution Board, which deals with problems of world-wide transportation of oil supplies needed for military and essential civilian uses.

Bids to Be Accepted on 16-Mile Kansas Pipe Line

Bids will be taken soon on 16 miles of 12¾-inch natural gas pipeline to replace an existing 6⅝-inch line operated by the Kansas-Nebraska Natural Gas Company, Inc., Phillipsburg, Kansas. The line will be in Rooks County, Kansas, and will move natural gas from the Hugoton pool. Completion is expected this year and will help to serve Colby, Norton and Phillipsburg, Kansas, and Holdrege, Nebraska, and other communities.

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ALEXANDER BOYNTON, 66, independent operator of San Antonio, Texas, died in Philadelphia, Pennsylvania, September 21. He held patents on many oil-industry inventions, and had long been identified with development of the Somerset field, in Atascosa County, Texas.

Hearing on Humble Case Scheduled for Atlanta

A hearing before a United States circuit court of appeals October 2 at Atlanta was to be the next step in Humble Oil & Refining Company's controversy with the WLB over the question of a maintenance-of-membership clause in the contract between the firm and the CIO, bargaining union for workers in the refinery at Ingleside (Corpus Christi), Texas.

The company went into federal district court at Dallas and obtained an injunction against federal agents seizing the plant. This injunction was suspended by the circuit court at New Orleans on the plea of government attorneys that seizure of the plant is not pending nor contemplated. It was said the latest order does not overrule the Dallas court decision but freezes relations between the company and the government agencies pending hearing.

Revenues from Gasoline And Petroleum Set Record

Revenues from the federal gasoline and lubricating-oil taxes reached new war-time high levels in August, and receipts from pipe-line transportation showed a moderate gain over July, the Internal Revenue Bureau reported September 26.

Gasoline-tax receipts for the month were $36,256,042, the highest figure recorded since January, 1942, and an increase of $4,500,000 over the $22,213,653 reported for July, the bureau announced. Lubricating oil revenues were at an all-time high of $6,747,702, compared with $5,473,271 in July, and pipe-line collections increased from $1,120,079 to $1,563,986.

For the first eight months of the year, bureau records showed gasoline-tax collections of $184,062,555 against $169,142,407 for the corresponding period in 1943, lubricating oil receipts of $39,136,100 against $31,129,030, and pipeline collections of $10,725,959 against $9,250,711.

July Production Less Than PAW Certifications

The Bureau of Mines last week announced July production to have averaged 4,558,000 barrels daily with a demand for domestic crude of 4,735,500 barrels a day. PAW certifications called for production of 4,606,100 barrels daily or an increase of 20,000 barrels a day over June, but the report showed that actual production declined 17,000 barrels daily.

Total runs to stills for the first seven months of the year showed an increase of more than 20 percent over the same period in 1943, while demand for motor fuel, placed at 417,000,000 barrels for the period, represented a gain of approximately 22 percent, the bureau said. The July yield of gasoline from crude oil, it was noted, was at the high figure of 38.9 percent, compared with 36.7 percent in July, 1943.

The price index for petroleum and products remained unchanged from June at 64, compared with 62.8 in July, 1943, while, on the basis of a crude oil capacity of 4,843,000 barrels, the operating ratio was 96 percent compared with 86 percent in the same month last year.

Ceilings on Lower-Gravity Oil in Kansas And Oklahoma Put Into Effect by OPA

Specific dollars and cents ceilings for lower-gravity crudes in Oklahoma and Kansas and Pennsylvania-grade crude in one area of Ohio were put into effect October 3 by the OPA, but were made retroactive to August 1 so stripper pools involved may be eligible for full payment of the government's subsidy.

The higher-gravity Oklahoma and Kansas crudes also will carry specific ceilings, but at the levels established through prices which have been posted by purchasers at the wells. In neither case, the OPA said, will there be any changes in the prices heretofore paid for the oils.

The ceilings will range from $1.25 per barrel for 40-gravity and above to 83 cents for less than 20-gravity at the usual differential of two cents for each degree of gravity, with the following exceptions:

Ceiling Prices

Morel Pool, Graham County, Kansas, is given a scale of $1.25 to $1.03 for oil from 40 and above down to 29, with a uniform price of $1.01 per barrel for all below 29-gravity.

Cement Pool, Caddo County, and the Oklahoma City Pool, Oklahoma County, Oklahoma, will observe the 85-cent to $1.25 range for oil from 20-gravity up, but will have a reduction of three cents per barrel for each degree of gravity below 20 and down to 16, giving a ceiling of 73 cents for 16-16.9-gravity.

Heretofore, the OPA said, ceilings had been the same for all sellers in the two states for gravities above 29, but for gravities under 29, while the ceilings were uniform, actual prices charged varied.

In that part of the order applying to Ohio, a ceiling of $2.25 per barrel is estimated for Zanesville Pennsylvania Grade crude in Morgan, Muskingum and Perry Counties, and straight Pennsylvania Grade crude produced in Blue Rock Township, Muskingum County.

It was explained that regular Pennsylvania Grade crude produced in this area has a ceiling of $2.25 per barrel but, because of an excessively high filtering cost, Zanesville Pennsylvania Grade and the Pennsylvania Grade produced in Blue Rock Township have been sold at 30 cents off the regular price, or $2.25. Under the stripper well premium plan, however, the ceiling in both instances would be figured at $2.55, and first purchasers paying producers the 75-cent premium for this oil would be able to obtain reimbursement of only 45 cents; the change in official ceilings will permit reimbursement of the entire 75 cents.

Other Changes

Two other changes were put into effect by OPA at the same time:

1. Producers of dry gas are permitted to renegotiate contracts in those cases where a substantial part of the sales during April, 1942, already has been renegotiated. The predetermined uniform price schedule under which the other contracts were renegotiated must be followed. In no cases can the new contract price exceed the prevailing price for dry gas in the same marketing area. Since May, 1942, renegotiated contracts could not be made at prices above the old contract levels. When prices were frozen in that month, some producers were in the process of renegotiating contracts in accordance with a predetermined uniform price schedule and the amendment permits continuation of that process where a substantial part of it had been completed in April, 1942. Industrial consumers purchase this gas direct from producers and they will absorb any increases made over existing contract levels.

2. It is expressly provided that crude oil sold by producers must take ceilings established by the crude oil regulation except where the producer sells crude directly to a consumer for use as fuel oil or for gas enrichment purposes. Sales under those two exceptions will have ceilings established under the fuel oil regulation. Where sales of crude are made for use as fuel oil in oil and gas field operations, however, the ceilings will be under the crude oil regulation.

Socony-Vacuum Economist Gives Postwar Forecast

Foreseeing a total demand of crude oil in the United States in excess of 4,066,000 barrels by 1946, Albert J. McIntosh, economist for Socony-Vacuum Oil Company, speaking before the Empire State Petroleum Association in New York, predicted a bright but always changing future for petroleum after the war.

The 1941 total United States demand average of 4,066,000 barrels a day may be considerably exceeded by 1946, McIntosh said with heavy fuel oils for the navies and commercial vessels leading the expansion. "United States companies may not be able to supply this entire national demand at competitive prices which means imports or ships bunkering in foreign ports," he declared. "If the product is available at competitive prices, we estimate that the quantities shown could be sold."

By 1948 he believes gasoline demand will go to 1,146,000 barrels daily, the 1941 figure. The peak demand however, might be lower if more efficient cars come on the market in 1947.

As late as 1950 only about 30 percent of the present total production of aviation fuels will be used, according to McIntosh, who forecasts that "all in all, the gasoline market will expand, but the nature of this expansion will not be by passenger cars as in the past." Trucks, buses and tractors can be expected to use more and more gasoline.

Use of heating oils will be affected by expansion in home building. In 1941 there were in use an average of 2,243,000 home burners. "I forecast," the speaker said, "that this market will increase to 3,500,000 homes having distillate oil burners. In the postwar period there will be about twice as many new homes built and I forecast the burner industry will sell about one out of every seven an oil burner," he said.

Surplus Stocks Already on Sale Include Oil Products

Surplus war products which cost the government approximately $269,000,000 have been turned over to the Reconstruction Finance Corporation for disposal, it was announced September 28 by Secretary of Commerce Jesse Jones.

Included in these stocks, the report showed, were gases, including liquefied petroleum gases, costing $978; gasoline and liquid hydrocarbon components costing $18; naphtha, solvents and finished light products costing $25,674, and lubricating oils and greases costing $46,506.

So far, none of these stocks have been disposed of beyond $127 worth of lubricating oils and greases sold in Omaha at the price for which the government bought them.

Bammel Well Receiver

An Austin, Texas, court has named Peter Maniscalco, Houston attorney, as temporary receiver in litigation over a cratered well in the Bammel field, Harris County. A suit to enjoin a Texas Railroad Commission order for killing the well and a cross-action to compel obedience to the order are on file in the same court. F. M. Corzelius is owner of the well.

Oil Firm Safety Directors To Have Part in Meeting

Safety directors of several oil companies will take part in the program of the petroleum section of the Thirty-Third Annual National Safety Congress in Chicago, October 3-4-5.

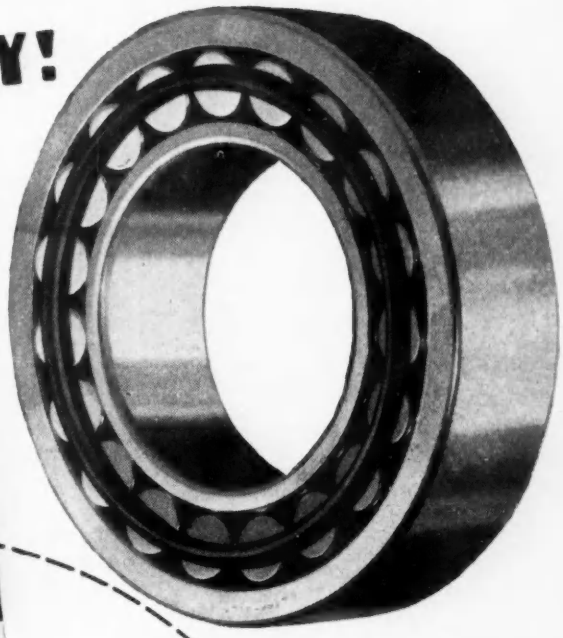
Assigned to take part in the symposium on Weaving Accident Prevention into Operations, are the following: Discussion leader, C. L. Hightower, United Gas Pipe Line Company, Shreveport; "In Production and Manufacturing," C. A. Miller, The Texas Company; "Causing Key Supervisors to Carry the Ball," E. E. McPherson, superintendent of the Heath refinery, The Pure Oil Company, Newark, Ohio; "The Safety Supervisor's Position," P. E. Keegan, Shell Oil Company, New York; "Organization and Training Needed Now for Present Conditions and Postwar Changes," W. O. Wilson, Standard Oil Company (Indiana), Chicago; "Conservation of Manpower Through Off-the-Job Accident Prevention Activities," Roy S. Bonsib, Standard Oil Company (New Jersey).

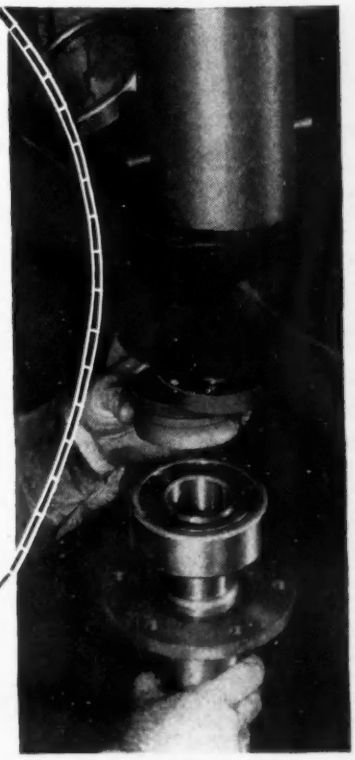
Pipe Line Spurs Planned In Kansas and Oklahoma

Consolidated Gas Utilities Corporation of Oklahoma City will lay about a mile of 4½-inch line from its existing pipe line in Rice County, Kansas, to Sterling and will abandon 1½ miles of its 5½-inch line which is in poor condition.

The company also plans to lay 3½ miles of 8⅝-inch line in Caddo County, Oklahoma, from its Lawton-Comanche system to an 8-inch line operated by Ray Stephens, Inc., which connects with the Cities Service Oil Company's 16-inch line from the Cement pool.

Friction Fighting Bearings for PUMPING ECONOMY!





● Link-Belt Series "DE" Self-contained Friction Fighter Roller Bearings are assisting in fighting—and whipping "Down-time," enemy No. 1 of pumping well economy. "DE" Series Friction Fighter Bearings in pumping unit Pitmans insure trouble free bearing service indefinitely. Factory assembled with proper operating clearance, they require no adjustment when assembling in Pitman Bearing housing to assure free rolling. They carry radial or thrust loads, or any combination of both, with equal efficiency. Link-Belt Friction Fighter bearings are available in ball or roller types, unmounted or mounted . . . in pillow blocks, hangers, flanged or take-up mountings. Check carefully the Series "DE" unmounted Friction Fighter bearing (at right) . . . see it being pressed on the wrist pin . . . then wrist pin with mounted bearing being assembled in crank of an EMSCO Pumping Unit. (below) Note the EMSCO Pumper complete, with Pitman safely assured for dependable production of oil, with maximum economy; thanks to rugged self-aligning "DE" bearings. For full engineering and application data send for Data Book No. 1775-A.

LINK-BELT COMPANY

Indianapolis 6, Dallas 1, Houston 2, Kansas City 6, Mo., Los Angeles 33, New York 7, Toronto 8. Distributors in all fields.

LINK-BELT

FRICTION FIGHTER

BEARINGS

Roller and Ball Types

PLASTICS DERIVED FROM PETROLEUM AND NATURAL GAS AND SOME OF THEIR USES

OXIDATIVE REACTIONS

METHYL ALCOHOL

Methyl Cellulose
Excellent paper size and textile treating agent

Acrylic Resins
Binders for wood, rubber, glass, textiles and metals. Coatings for fabrics. Dentures. Medical, surgical and industrial illuminating instruments. Optical lenses, magnifying glasses, safety goggles, and artificial gems. Bomber nosepieces.

FORMALDEHYDE

Phenolics
Most versatile of all plastics. Bonding agent for laminated materials, plastic bonded plywood, silent gears, bearings, radio and television parts, panels, electroplating barrels, electrical radio coils, molded parts.

Ureas
Radio cabinets, shatterproof electric light shades and reflectors, tableware, display boxes. Bonding agent, crushproofing textiles, water repellant.

Melamines
Applications range from tableware to electrical circuit breakers and include plywood adhesives, buttons and baking enamels.

Caseins
Applications limited by poor resistance to water. Used chiefly for nonexacting articles such as buttons, beads, buckles, jewelry, poker chips, etc.

Lignins
Bonding agent. Used in laminated paper and other laminated products including switchboards, signs, door kicks, cabinets, and foundry pattern plates.

Polyvinyl Formal
Important magnetic wire insulation.

ACETIC ACID

Polyvinyl Acetate
Adhesive of great merit. Bonding cellophane, paper, cloth, glass, leather, wood, metal. "Scotch Tape." "Plastic Wood," safety castings for the interior of photoflash bulbs.

Polyvinyl Acetals
Include polyvinyl formal and butyral.

Cellulose Acetate
Airplane window screens, combs, extruded strips, flashlight cases, fountain pens, gauges, hose nozzles, knobs and handles, lamp housings, mechanical pencils, oil cans, goggles, razors, spectacle frames, steering wheels, telephone sets, tooth brushes, transparent containers.

Cellulose Acetate-Butyrate
Applications similar to those of cellulose acetate, but have greatly superior moisture resistance, improved dimensional stability, excellent weather resistivity and high impact strength.

MISCELLANEOUS PROCESSES

AMMONIA

Urea Resins

Nylon

PHENOL, CRESOLS, AND CREYSLIC ACID

Phenolics

Nylon

PETROLEUM RESINS

Natural Resins

Cracked Petroleum Resins

CRACKING AND PYROLYSIS

ACETYLENE

Polyvinyl Chloride
"Koroseal and Vinylite Q." Shower curtains, bathing caps, electrical cable coating, tank linings, flexible tubings and waterproofed fabrics.

Polyvinyl Acetate
Adhesive of great merit. Bonding cellophane, paper, cloth, glass, leather, wood, metal. "Scotch Tape." "Plastic Wood," safety castings for the interior of photoflash bulbs.

Polyvinyl Alcohol
Valuable adhesive, ceramic binder, gelatine substitute, textile size and rubber substitute.

Polyvinyl Butryal
Interlayer for safety glass. Material for Army raincoats, self-sealing fuel tanks, stirrup-pump hose.

ETHYLENE

Ethyl Cellulose
Of great importance in foundations of lacquers for brushing, spraying or dipping. Ethyl cellulose solutions ideal for shatterproof glass lacquers, shellac substitute, varnish, resistant fabric coatings, laminating adhesives, textile sizing.

Polystyrene
Exceptionally beautiful in clear and tinted varieties. Bottle caps, dishes, battery boxes and medical equipment. Refrigerator parts, radio and television parts, transparent tubing.

Polyvinylidene Chloride
Exceptionally wide range of applications from subway seats to chemical tubing and pipe. Nozzles, funnels, novelties, lacquer pump pistons, hose connections, large and small diameter pipe and tubing. "Saran."

Polyvinyl Chloride
"Koroseal and Vinylite Q." Shower curtains, bathing caps, electrical cable coating, tank linings, flexible tubings and waterproofed fabrics.

Polyvinyl Butryal
Interlayer for safety glass. Material for Army raincoats, self-sealing fuel tanks, stirrup-pump hose.

Polythene
A vinyl type resin, looks like gutta percha, used to cover wires and cables. Important in war uses.

Acrylic Resins
Binders for wood, rubber, glass, textiles and metals. Coatings for fabrics. Dentures. Medical, surgical and industrial illuminating instruments. Optical lenses, magnifying glasses, safety goggles, and artificial gems. Bomber nosepieces.

PROPYLENE

Alkyd Resins
Have great outdoor durability with quick-drying and excellent adhesion to surfaces of many types, including metal. Automobile finishes; finish for tanks and ships; durable house and marine paint, sealers and lacquers for furniture. Military uses run into hundreds.

Acrylic Resins
Binders for wood, rubber, glass, textiles and metals. Coatings for fabrics. Dentures. Medical, surgical and industrial illuminating instruments. Optical lenses, magnifying glasses, safety goggles, and artificial gems. Bomber nosepieces.

Allyl Resins
Glass substitute in all airplane openings that have to be covered.

ADAPTED FROM WEIL AND ANHORN'S "PLASTIC HORIZONS"

Plastics Promise More Aid to Oil Industry

Postwar applications may include selective plugging in lime fields for acidizing, sealing bridge plugs, setting blank liners and repairing leaks in casing

By A. R. McTEE, Staff Writer

APPLICATION of plastics to the oil industry of the feature is marked by a high degree of uncertainty. Revolutionary adaptations now seem unlikely, at least for a long time. In spite of the great boost in development of plastics brought about by the war, most of the current thought on extension of their use minimizes the idea of a "golden age" wherein these fantastic new materials from the earth and the sea will replace age-old, stable elements like iron and steel.

For as if to counterbalance the abundant supply of raw materials from which plastics can be made, nature has placed limitations on these materials which carry over into the finished products. These limitations must be overcome before full use of plastics can be realized. Before sweeping adaptations of plastic equipment can be made to the oil industry which makes such strenuous demands on equipment, plastic engineering must progress through channels that are as yet unchartered. Manufacturers of plastics look on the current predictions of a "Plastic Age" with some amusement. They understand that plastics, like other materials, give the best service when used in the right place.

The lure of plastics has tempted the popular press to the point of exuberance with some over-statement. But there is justification for this enthusiasm. The long list of present and potential uses for plastics is growing at an astonishing speed. Any development of science that can give products ranging from buttons and nylon hose to shatterproof windshields, high-octane fuels and potent medicines, warrants our healthy interest, to say the least. A complete exhibition of plastics would embrace thousands of articles starting with simple novelties like flower jewelry and ending with such complicated devices as gears and bearings. There are now at least 248 plastics or related materials with trade names, 39 synthetic rubbers derived from plastic bases, and 10 synthetic fibres of plastic composition.

Only the Beginning

And yet, all manufacturers making plastic articles consider the plastic industry as just beginning. Manufacturers also realizes that plastics have to compete with other substances, and that unless they can give as good or better performance than other materials, at less cost, their growth or application will be slow.

Plastics are not a new development, though their most intensive use is of comparatively recent origin. Credit for the first actual discovery of a plastic goes to John Wesley Hyatt of Albany, New York. In 1868, while trying to win a $10,000 prize offered by a New York company for a new billiard ball, he mixed finely-divided wood, rags and paper pulp with glue, shellac, starch and some other adhesives. To further perfect his experiment he included collodion in one of his mixtures, and finally pryoxlin. Then without any good reason for doing so, he added camphor and the results were highly satisfactory. Two years later, Hyatt mixed his new material, celluloid, with a pink coloring and celluloid as we know it came into being. He organized a company for making dental plates and the Celanese Celluloid Corporation of today is a successor to Hyatt's original company.

Celluloid First Plastic

Thus celluloid was the first plastic of which there is any record. Casein plastics from skimmed milk and formaldehyde were made in Europe, but were not introduced into this country until 1919. Bakelite and the phenolic resins had their start about the turn of the century and the industry grew slowly but steadily until 1936 when production of synthetic resins started spiralling. In 1927,* for example, production of these resins in the United States was 13,452,000 pounds. By 1935, the total yearly output had reached 95,133,000 pounds. The 1936 yield jumped to 132,913,000 pounds, and for 1941, the total was 437,800,000 pounds.

To fully grasp the scope of their application, it is well to have definite idea of what is included in plastics. In their new book, "Plastic Horizons," Weil and Anhorn summarize the term. "Plastic," they say, "when applied to substances which we are accustomed to see in the form of solid, rigid articles, at first seems quite incongruous to us. Upon investigation, however, we learn that this general term is applied to any substance that can be given a definite form by the application of heat or pressure, or both, and yet retain that new form after the stress or heat is removed. In a loose sense, such materials as putty, clay, glass, and metals are plastics. Industry, however, generally applies the term to substances which can be fabricated under moderate temperatures and pressures but which do not melt or soften under ordinary conditions. Even more specifically, the term 'plastic' is used to include a limited number of chemical materials, natural or semi-synthetic, such as celluloid, and the natural or synthetic resins. A 'resin,' in turn, is a semi-solid or solid complex mixture or organic compounds, with no definite melting point and characterized by a typical luster and fracture. Some people are inclined to use 'plastic' and 'resin' as interchangeable terms, but while resins may be made into plastics, there are many plastics which do not have the properties of resins. 'Plastics,' therefore, is a name for all; 'resins' is not."

Value to Oil Industry

The most direct application of plastics to the oil production operations so far has been for well plug-back work. The rapid growth of this development was traced in a paper by E. B. Miller, Jr., of the Tide Water Associated Oil Company, Kilgore, Texas, read before the Southwestern District API meeting in Houston in June, 1944, and which was printed in THE OIL WEEKLY of June 19.

As pointed out in this article, the plastics used for plug-backs can be controlled in temperatures ranging from 80 degrees F. to 280 degrees. Catalysts control the setting time. Qualities of neat cement are approached by the plastics which has tensile strength of 240 pounds per square inch and compressive strength of 1900 pounds. Also the solid plastic is chemically inert and insoluble in crude oil, brine, fresh water and other materials usually found in oil wells.

Success of this plastic in plugging back wells led the author of the article to suggest future uses. Some of his ideas are merely "thoughts" and may never be tried. However, the following list of uses involves a greatly expanded field of application over the present plug-back work. Miller says the future may see:

"Selective plugging in lime fields for acidizing, using the electric pilot.

"Selective plugging for gas-oil ratio control.

"Shut-off for water sands in cable tool areas to eliminate extra strings of pipe.

"Tamp for nitro-glycerine shots.

"Sealing bridge plugs.

"Sealing annulus between two casing strings to protect from corrosive waters.

"Place plastic around shoe joint when cementing casing.

"Setting blank liners.

"Repair leaks in casing.

"Selective control of injection zones."

Plastic pipe and tubing, whose basic material is a chemically inert thermoplastic resin, have also been used directly in the oil industry and are sure to find further postwar application. The light weight of this material, plus its durability, and its resistance to corrosion and abrasion, make it suitable for many oilfield uses. Present diameters range from ½-inch through 4-inch for the pipe, and ⅛-inch through ¾-inch for the tubing. Larger sizes will be produced after the war.

Indirect Benefits

Judging from present development of plastics, it appears quite probable that the greatest benefits to the oil industry will be indirect. As uses for plastics are expanded, manufacturing processes and equipment of many kinds will be affected.

Westinghouse Research Laboratories,

*Figures from "Plastic Horizons," by Weil and Anhorn. (Jaques Catell Press, Lancaster, Pennsylvania.)

ADAPTED FROM WEIL AND ANHORN'S "PLASTIC HORIZONS"

for instance, have perfected: a new moisture-proof plastic which is to be applied to insulation of electrical equipment; a "missing link" in the family of plastics that can be formed into complex shapes so strong that a one-inch square bar can stand a pull of 16,000 pounds; a technique for "stretching" hot plastic material into complicated shapes; and a new synthetic resin to replace shellac in many important applications. All these materials are destined to add greatly to the efficiency of electrical equipment, especially motors and transformers. In tropical climates where damage from moisture is great, much better performance can be expected from such machinery, due to these improvements.

Dr. J. A. Hutcheson, associate director of Westinghouse Research Laboratories implies this broad, indirect application of plastics to all industry when he says, "Consider plastics for industry in terms of the scientist's and the engineer's point of veiw. In this field, plastics are rightfully considered prime materials and not ersatz materials. Industrial research and development are not aimed at providing substitutes, but at providing new prime materials which can do better jobs than anything in existence."

The whole field of laminated plastics can be counted on to expand notably and undoubtedly the impact on the oil industry will be beneficial. Plastic bonded materials that approach pound for pound the strength of structural steel are certain to find their place in the manufacture of heavy-duty machinery. A bearing weighing no more than 50 pounds that can carry a million-pound load ought to have a profound influence on bearings in general. Such a bearing made from plastics is now in use. Plastic pulleys are said to cause practically no wear on cables and their use about drilling rigs should be a logical evolution.

Plastics for Steel

The above items are substituting for steel and indicate a trend which may eventually result in plastics replacing steel for many uses. The trend however, is in its infancy. In an article titled "Plastics vs. Metals," appearing in the August issue of "Mining and Metallurgy," by Don Masson, technical editor of the Bakelite Corporation, it is pointed out that "The total yearly tonnage of plastic materials is approximately one percent of steel and only a small fraction of this might even be considered as actually replacing steel."

On a matter of metal replacements, by plastics, Masson concludes that the chemical engineer probably sees more replacements of rubber and glass by such plastic as the flame-resistant and non-oxidizing vinyl resins, the non-shattering and crystal-clear vinyls and acetates, than replacements of metal. Plastics made from phenols offer many qualities of metals and exceed them in some features. "For certain mechanical applications," writes Masson, "phenolic plastics in particular will eventually supersede metal. This is not because of any greater strength they may possess, but because they are adequately strong and, at the same time, provide characteristics foreign to metal. Light weight is one outstanding reason why plastics are replacing metal, such as aluminum, in many instances. Resistance to corrosion, electrical insulation, self-contained color, and a highly lustrous surface finish are others. Equally important is the fact that plastics products often may be completely finished in a single, rapid operation by molding. Typical examples where these combinations of properties are used to excellent advantages are in the molding of housings for industrial instruments, business machines and household appliances, all once made entirely of metal."

Metal Supplement

As an example of metal replacement in industry, this author cites the fabric base bearings molded to finished dimensions, which serve as the roll necks of large blooming mills in the steel industry. "In such severe service," he says, "laminated phenolics have demonstrated a shock absorbing capacity because of excellent elastic hysterisis qualities, and a wear resisting capacity greatly superior to metal bearings."

An interesting paradox in the characteristics of plastics as compared to metal is cited. Two plastic gears in mesh have been found to wear very quickly. A metal gear mashing with a plastic gear, on the contrary, has been found very satisfactory. The matching of plastic and metal gears followed to give qualities of silent operation and long life.

On the whole question of plastics versus metals, Masson sees plastics as complementing and supplementing metal rather than replacing it.

"The instances in which plastics and metals can be employed in complementary fashion are already numerous," he states. Illustrating further, he notes that "Plastics can be metal plated. Metal and mineral fillers, such as powdered iron, lead, aluminum and copper, zinc oxide, barytes, graphite, and asbestos, can all be resin bonded. Plastics solutions can be used to seal porous castings and thus minimize the number of rejects. Resin base enamels, varnishes and lacquers can play conspicuous parts in equipping metals to give longer and more satisfactory service, especially in areas where metal products are subjected to salt spray from brine and to acid fumes. Synthetic resins are used to bond modern high speed abrasive wheels, employed so extensively throughout the metal trades for precision grinding. And plastics and metal components can be teamed up to produce numerous appliances and useful articles of all types. In the postwar era, plastics and metals will on occasion compete for the same job, and all factors considered, the best material will win. But probably the two will oftener continue to find themselves comrades in arms."

This complementary use of plastics and metals suggests that many items of equipment in the oil industry may come in for improvement: Non-corrosive linings for pipe, valves, pumps, oil containers, engine parts, tubing, tools, and numerous other articles are likely to be produced. Coatings will probably be applied to much equipment to combat damage in handling and to eliminate corrosion. Resin bonded materials may easily result in equipment of additional strength that will be needed as deeper drilling progresses. More effective uses of plastics for sealing off troublesome formations in oil and gas wells is predicted. Plastic solutions for sealing porous surfaces of equipment seem ideally suited for many oilfield supplies, as well as other types of oil-field work in addition to plug-backs already mentioned. And so the list goes. All these products or uses seem an easy and logical step in the evolution of plastics and plastic-metal applications. These complementary uses are well past the experimental stage; it remains only for designing engineers to effect applications suitable to needs. It is safe to say that the progressive character of the oil industry will demand latest development and improvement in its equipment when the war is over. Whatever part plastics can play in this improvement will surely be utilized.

During the war, the petroleum industry has furnished immense quantities of basic materials from which plastics have been made, and it may be that the greatest influence the plastics industry will have on the petroleum industry will be that of turning crude oil and natural gas to plastics. As far back as World War I a few oil companies pioneered in producing toluene for the manufacture of TNT. From this idea sprang the possibility of other chemical derivatives from petroleum and as an outgrowth of studies in the Mellon Institute of Industrial Research, chemicals have been produced from petroleum that tie up with plastics, as shown by the accompanying chart. The petroleum hydrocarbons, it has been found, offer a diversity "far beyond that of raw materials from coal or wood, and when properly selected, are often the ideal base materials for chemical synthesis."

'Naturals' for Refiners

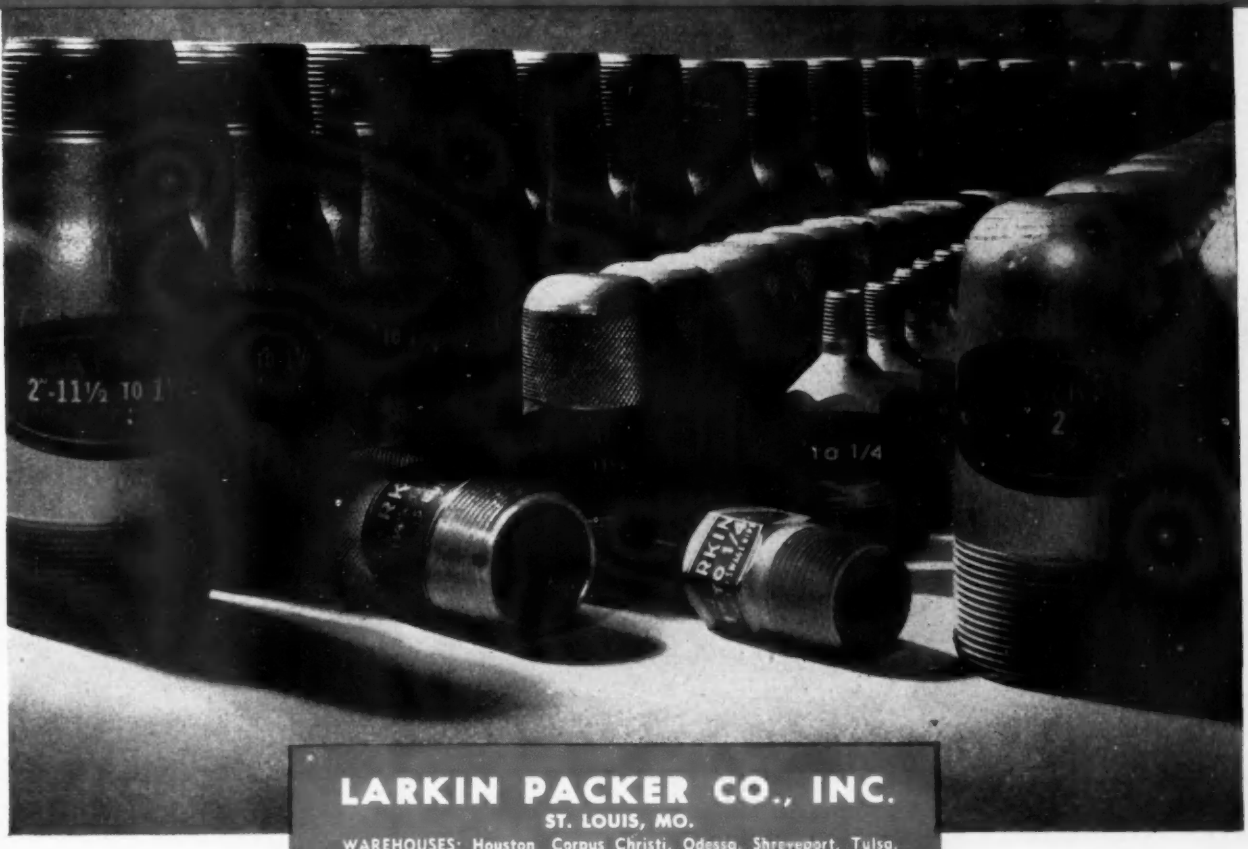
Of petroleum and plastics, Weil and Anhorn, say: "Chemicals for which markets exist or can be created are really 'naturals' for petroleum refiners, for most presently-known petroleum-derived organic chemicals are produced from the gaseous fractions which the refiner possessing in superabundance, formerly burned as fuel, or even wasted because he had no better use for them. Interested first in such right-at-home products as 100-octane aviation gasoline (a fraction of each gallon comprising a true petroleum chemical) and additives to give lubricants longer life and greater strength, petroleum companies did not hesitate to branch out in new directions.

"There are those who point with alarm to our dwindling petroleum reserves, fearing that new uses, chemical or otherwise, will hasten the day when our demands can no longer be met by domestic production. In a minor sense all this is true; yet, as we already have seen, even if all the organic chemicals produced in 1941 had come from petroleum (an obvious impossibility), their tonnage would have been less than 3 percent of the bulk petroleum products. Petroleum substitutes such as shale oil, too, generally contain or yield as by-products even more chemical intermediates and raw materials for synthesis than does crude petroleum, hence recourse to shale oil or liquefied coal need not end the day of petroleum chemicals —and all this may be decades away. Moreover, in our democratic system, dare we deny a company the right to produce chemicals with a sales value of several dollars per gallon from raw materials with a fuel value of only a few cents?"

RKIN SWAGE NIPPLES AND BULL PLUGS PROVIDE THESE ADVANTAGES:

1. Forged from Quality Steel
2. Seamless and Weldless—100%
3. Uniform length and shape
4. Precision Threads . . . Beveled for easy starting
5. Squared ends . . . Chamfered
6. Ample room for pipe tongs
7. Dependable . . . tested leakproof
8. Protective coating
9. Labeled with size and thread
10. Packaged uniformly for shipment
11. Ample field stocks
12. 17 years of improvements

CHECK YOUR COMPOSITE CATALOG FOR FULL DETAILS



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WAREHOUSES: Houston, Corpus Christi, Odessa, Shreveport, Tulsa, Great Bend, Salem. EXPORT: 74 Trinity Place, New York City

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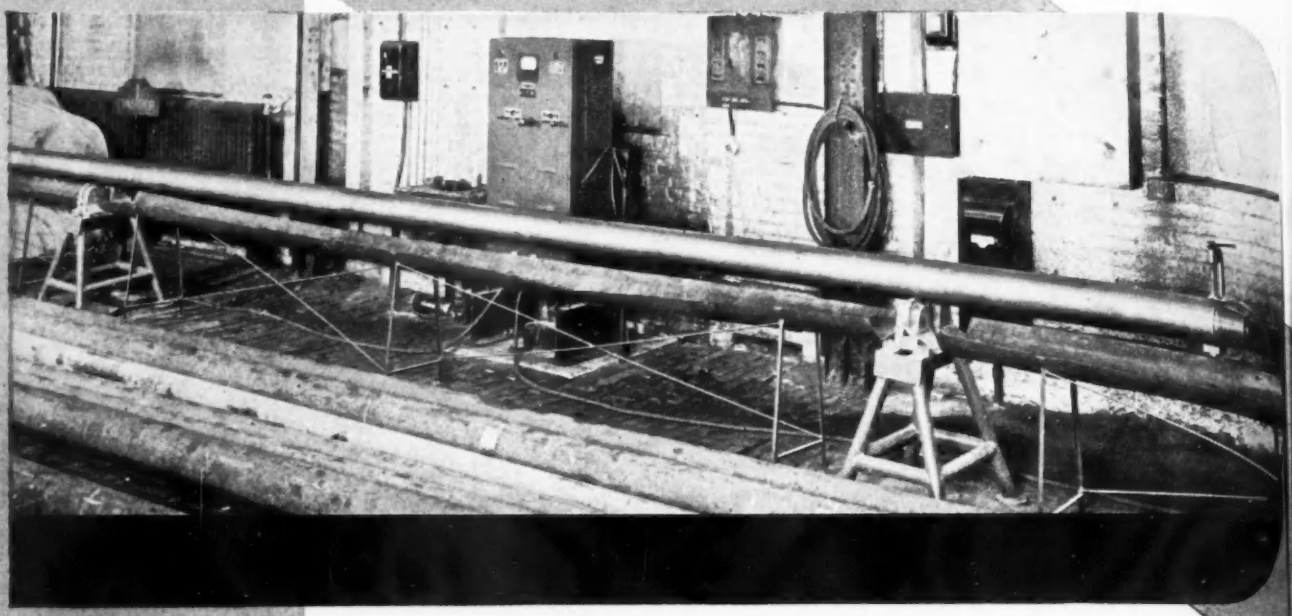
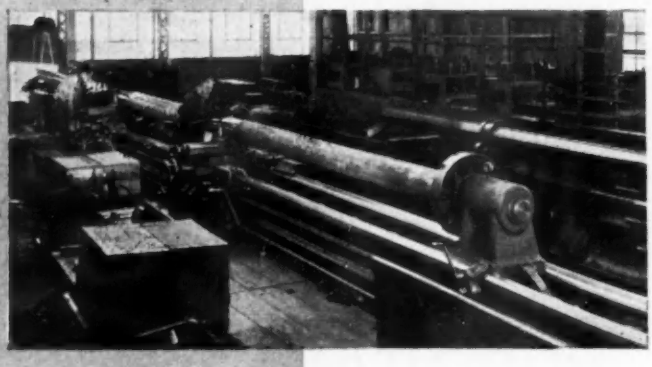
NATIONAL IDEAL *Magnaflux*

"Reg. U. S. Pat. Off."

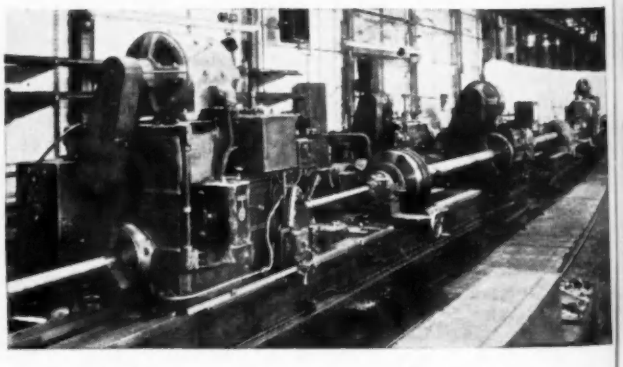
stronger, safer,



National Ideal *Magna-Flux* Tested Drill Collars are forged from billets of alloy steel with joints forged integrally, then normalized full length. These collars may be optionally furnished with (A) Heat treatment of the full length (quenched and drawn) or (B) Heat treatment of the ends only (quenched and drawn) to required hardness.



After the outside is machined, a true center bore is established by special machines boring simultaneously from both ends, boring tools rotating in a common direction and collar rotating in opposite direction. The finished bore is checked by passing through it a 10′ long bar ⅛″ less in diameter than the bore.



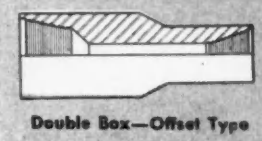
Collars with bores checked by using test bars with less clearance can be furnished at an additional charge. Bores 2¼″ diameter, and larger, are surveyed for concentricity with allowable variation of only 1/16″ per 10 feet of length. All Ideal rotary drill collars are machined throughout.

Tested DRILL COLLARS ARE longer wearing

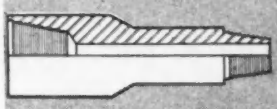
THE Magnaflux Inspection Method is the most modern technical development yet devised for the detection of hidden flaws, cracks and seams in steel.

The underlying principles of the method can be stated in fairly simple terms: If a piece of steel is magnetized so that the magnetic field crosses its flaws or defects at an angle, local poles are developed at such defects. When Magnaflux powder or paste is brought into the vicinity, they are attracted and held at these local poles and form a pattern of the defect. By this method cracks can be discovered with their edges compressed so tightly they cannot be seen under a high-powered microscope, and when the correct procedure and apparatus is employed, cracks and seams can often be located at considerable distances below the surface.

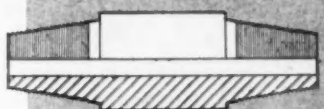
Perhaps the most convincing testimonial to the value of Magnaflux testing is its universal adoption by practically all commercial airlines in the United States and Canada.



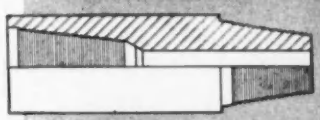
Double Box—Offset Type



Box and Pin—Offset Type



Double Pin—Straight Type

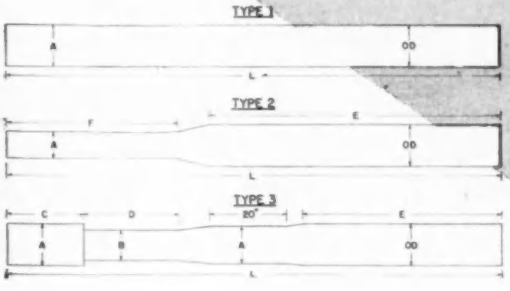


Box and Pin—Straight Type

TYPES AVAILABLE

Although collars are generally furnished with API tool joint box each end, they may be furnished with other joints as specified. Types generally specified are shown below. All standard tool joint boxes have joint sections long enough for several rethreadings.

Common field practice is to use two or more Type 1 collars on bottom of string, then reduce to the drill pipe size by the use of one Type 2 collar. National can furnish alloy steel substitutes for connecting the various collars.



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A general view of the undeveloped portion of the eastern half of U. S. Naval Reserve No. 1, Elk Hills. Total area of No. 1 is 43,000 acres, the eastern portion with known oil deposits measures roughly 21,000 acres. Western half, although not proved or disproved, is expected to contain oil deposits also. (Official U. S. Navy Photo.)

Navy's Elk Hills Reserve Tapped to Meet Critical Oil Shortage

Hoarded for such an emergency as now exists, great Pacific Coast Field was put to use by combined efforts of Navy Secretary and Standard Oil Company of California. Operation constitutes a partnership of government and industry that will be watched with keen interest

By E. S. BUNCH

HOARDED nearly a third of a century against just such an emergency as now exists, the United States Navy's greatest oil reserve, Naval Petroleum Reserve No. 1, in Elk Hills field, California, at long last has been tapped to relieve critical shortage of oil needed to fuel the war.

The decision to draw upon this great natural stockpile was a momentous one, especially from the viewpoint of a Navy high command that treasures the irreplacable stores as a military asset of incalcuable value, their depletion unthinkable except as a last resort. Consequently, long and serious consideration was given before the conclusion reluctantly was reached that the lid would have to be lifted. Nearly every branch of the Federal government right up to the White House took part in consideration of the proposal, final approval requiring the signature of President Roosevelt himself.

With the decision made, the Navy has gone into action with dispatch, efficiency and thoroughness. Prepared in advance for anticipated orders, when in June the word came through to start drilling, an "invasion" of Seabees occupied the field almost overnight. Some days later, after the clamor and clatter of bulldozers and other earth-moving equipment had subsided, what had been almost a barren landscape had become a mosaic of carefully leveled drillsites, all efficiently linked with excellent individual roads that lead into a main arterial system debouching into public highways that serve the region. Rotaries were humming almost before the news that work was to start had gained general circulation.

50,000-Barrel Goal

By the end of August, 14 wells had been completed, and their aggregate output of more than 3000 barrels a day was pouring into the floodstream of American petroleum that is a main dependence for victory of the Allied cause. But this is only a preliminary result achieved while the full complement of rigs and crews is being assembled. At the end of August, 10 outfits had gotten into operation. Five more outfits are being started, to make a total of 15 to remain in continuous day and night operation until a goal of 50,000 barrels a day of new production is attained. Added to existing private production within the Reserve, the daily quota of Elk Hills crude deliveries then will be 65,000 barrels a day. The tentative schedule of new wells calls for about 300, depending upon capacities. Total ultimate production contemplated is 30,000,000 barrels, to be made available within 18 months.

Overall drilling time per well ranges from 12 to 21 days. When all 15 rigs get into operation it is expected that a new well will be turned into the tanks every 24 hours.

It is significant that in this difficult and unfamiliar task the Navy is being implemented by private enterprise. Standard Oil Company of California, making available resources and facilities of every character, has shouldered the whole task of actual operations. Its management is hoping to add another important chapter to the record of service the American petroleum industry has rendered during the war.

Ideally Located

Although Elk Hills many times during the past several decades has figured prominently in the news, America just now is more nationally conscious of

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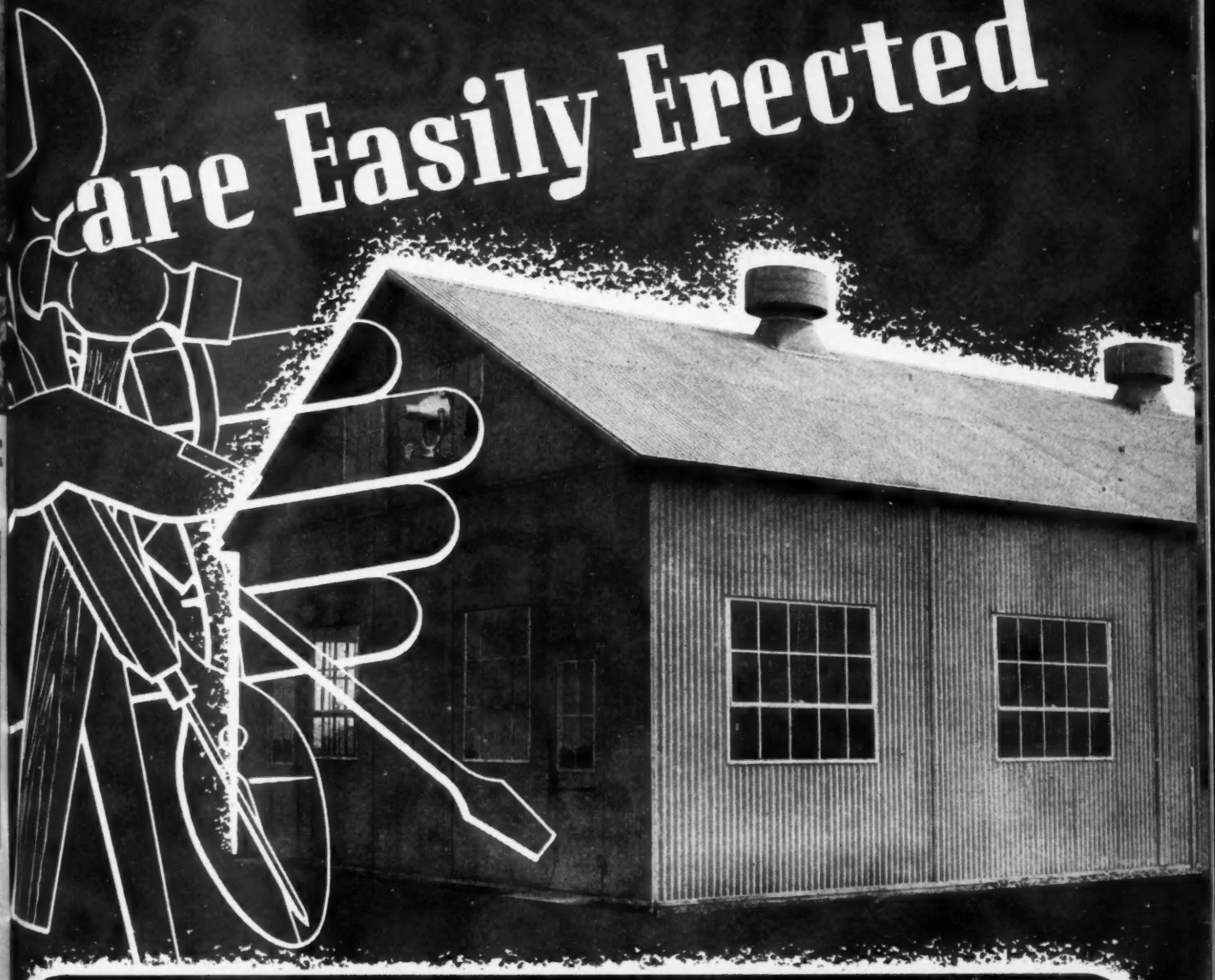

Yes it's a fact, that much of the popularity of Braden Steel Buildings with the oil industry, is due to the speed and ease with which they can be erected or dismantled, moved and re-erected. Neither highly skilled craftsmen nor special tools are required to erect these buildings.

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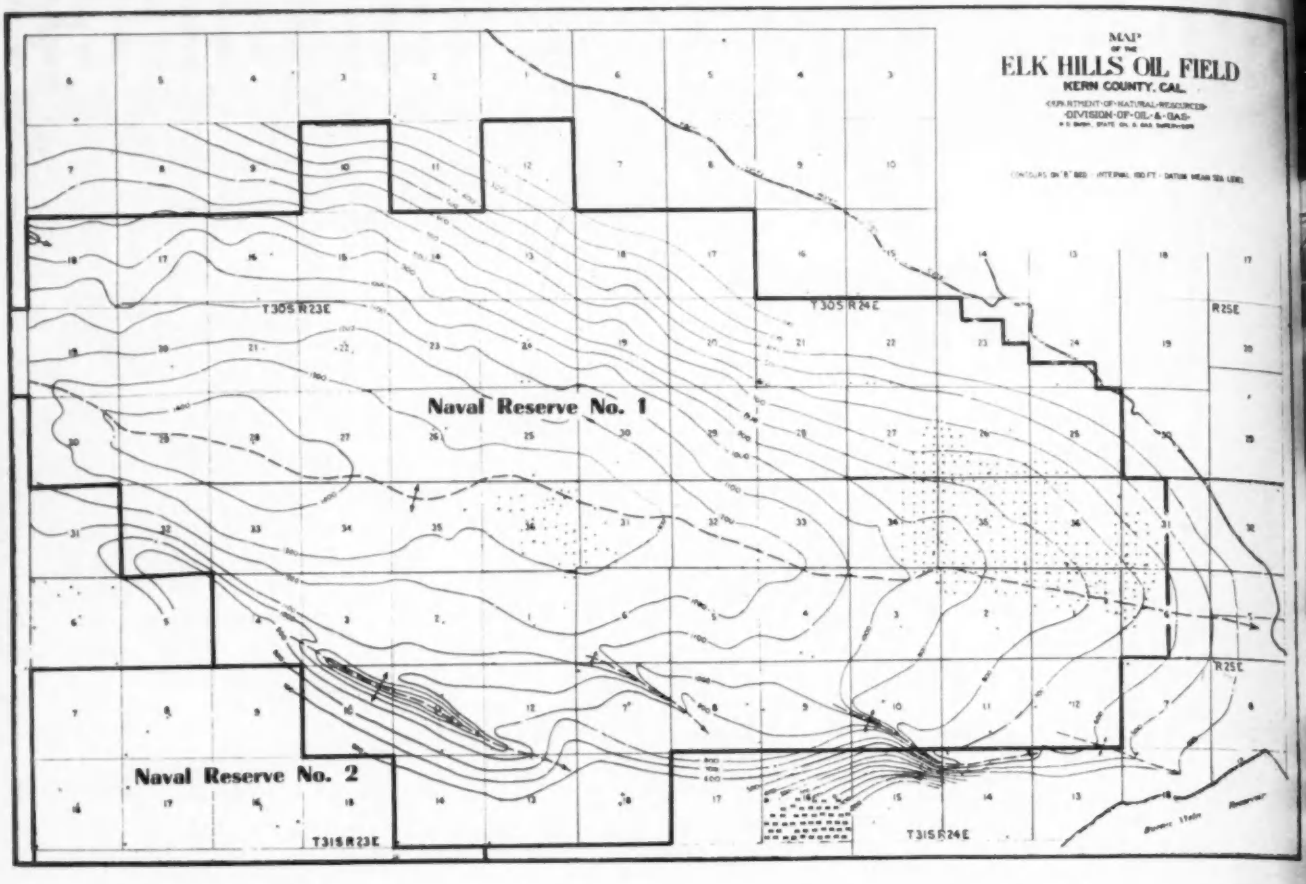


the importance of Naval Petroleum Reserve No. 1 than ever before.

With respect to accessibility Naval Petroleum Reserve No. 1 is ideally located. Eight pipelines of huge aggregate capacity serve the field, six of which reach to terminal facilities on the coastline available to world shipping. A total of 17 refineries, among them many of the largest and most modern in the country, are connected by this network of pipelines.

The major pipelines are two each to the San Francisco Bay and Los Angeles Basin regions. The others, one each, lead to Bakersfield and Maricopa, transport and refinery centers of the general Midway district, and also one each to Port San Luis and Estero Bay.

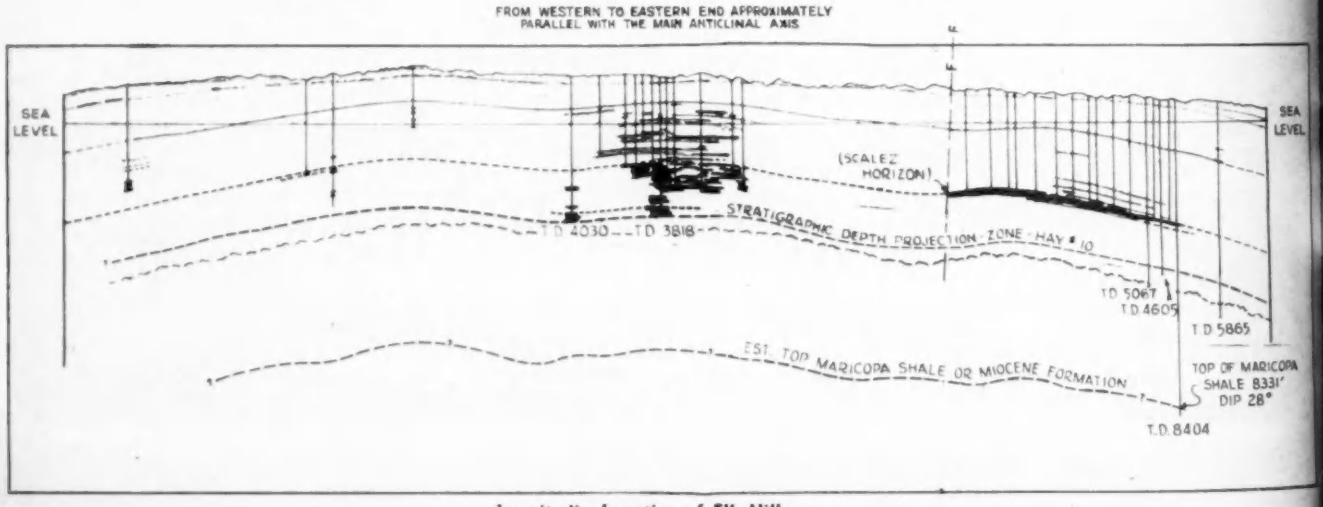
Locations of the refineries available to the Reserve are as follows: Los Angeles Basin, 10; San Francisco Bay region, 4; Bakersfield, 2; Maricopa, 1.

Huge Reserve Barely Scratched

The Reserve proper is comprised of 41,707 acres of its own lands and 1761 acres of public land leases, or about nine tenths of the entire Elk Hills oil field, situated in a long range of low hills for which the field was named, at the southern tip of the Great Valley of California.

The petroleum measures underlying the great area, although known to be enormous, are impossible accurately to estimate because of the present little-advanced stage of development. Although production up to January 1, 1944 had reached a cumulative total of 167,532,062 barrels, it had been extracted from a portion of Elk Hills' total resources of such limited areal and stratigraphical extent, that authorities consider the field has hardly been scratched. However, competent officials have no quarrel with estimates of remaining ultimate recovery belonging to the Reserve as great as 500,000,000 barrels.

Prospecting, discovery and development during the whole first decade of Elk Hills history accomplished little more than to point up the area's possibilities. The first discovery of commercial production was made in January 1919, when Standard Oil of California completed its Hay No. 1 well (school section 36-30s-23e) at a depth of 2532 feet, for 225 barrels per day of 37.2-gravity oil. Prior to this time 35 prospect wells had been drilled, but only 3 had been deep enough to give



Longitudinal section of Elk Hills

4A-10
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Executives in charge of the 300-well drilling campaign at Naval Petroleum Reserve No. 1, shown above, left to right: Victor Wankowski, Standard Oil Co. of California, member of executive committee; Commander Harry P. Stolz, USN, member of executive committee; and Al Tietze, superintendent of Standard Oil of California's producing department.

their respective areas adequate tests. None of the 3 obtained consistent commercial production, however, possibly because of improper mechanics and lack of geological knowledge for determining proper shut-offs.

At the time when this bureau was beginning to recognize enormous potentialities in the Elk Hills public domain prospect, the Director of the Geological Survey originated the idea of withdrawal from entry of public lands to constitute national oil reserves. This was responsible for partly bottling the big field even before a commercial discovery ever was made.

Chronology of Field

The reserve idea got its first official consideration February 28, 1908, when the Director of the Geological Survey, impressed by the British government's adoption of a policy looking to the conservation of liquid fuels for its navy, recommended like steps be taken by the United States government through suspension of further claims to oil lands in California that, he proposed, should be set up as a naval petroleum reserve.

Chronologically, the story of Elk Hills and the Reserve may best be summarized, as follows:

In 1909 the Survey's recommendation, after long and bitter controversy precipitated by conflict with private interests, was adopted, to the extent that government lands in California and Wyoming were withdrawn pending formulation of adequate legislation.

Between 1909 and the beginning of 1919, although large areas of privately held leases lay within the general tract blanketing withdrawn lands, prospecting was casual and ineffectual. Elk Hills, as a proved oil field, therefore, was not actually discovered until January, 1919, when Standard completed its first producer.

September 2, 1912 is the official birthday of the Reserve, inasmuch as it was on that date an executive order was promulgated establishing and titling 38,069 acres in Elk Hills, as Naval Petroleum Reserve No. 1.

Irrevocable rights vested in the Navy by this order immediately became a matter of greater concern to holders of leases and fee lands within, and adjacent to, boundaries of the Reserve. Their interests demanded development of production from pools shared jointly with the Navy, whose paramount objective, exactly the opposite, was to seal the underground reservoir against drainage indefinitely.

In 1919, after it had become obvious that the Reserve would suffer depletion and loss of some of its share of the oil if private operations continued to be permitted while the Navy's holdings remained undeveloped, Congress gave the Navy its first authority to drill, restricted though to wells necessary to prevent drainage.

Many years of negotiation, litigation and controversy over the respective rights of private operators and the Navy within the Reserve followed. Final settlement never was attained, but determination of many of the issues gradually added to the Navy's authority.

Exchange Authorized

In June, 1938, Congress again interceded enacting legislation that authorized the Secretary of the Navy to negotiate on an exchange basis the trading of lands within the Reserve by private owners in exchange for Navy acreage within Naval Petroleum Reserve 2, in the adjacent Buena Vista Hills field.

In June, 1944, after many months during which Elk Hills once again was the subject of acrimonious debate in Congress and interdepartmental wrangles, official Washington belatedly bowed to the Navy and conceded the long-sought authority (1) to open the Reserve and (2) to enter into a contract with the Standard Oil Company of California to drill new wells. This contract, among other provisions, defines the rights of both parties and provides protection for the interests of each.

Thus, the story of Elk Hills Naval Reserve is brought down to the present chapter, one that will merit a place of no small distinction in the record of World War II.

Standard of California, discoverer and pioneer developer of Elk Hills, as holder of large acreage overlying some of the richest measures, is owner of interests inseparably mingled with those of the Navy. So long as the existing relationship obtained, any operation by one independent of the other was certain to result in conflict.

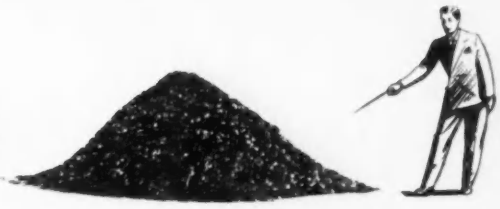
But when war brought an urgent demand for the oil under Elk Hills, con-

Annual Development and Production Record, Elk Hills Field, California

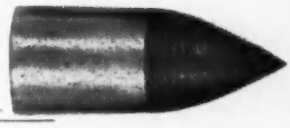
YEAR	Wells Completed	OIL WELLS END OF YEAR: Shut In	OIL WELLS END OF YEAR: Producing	*Average No. Wells on Production During Year	ANNUAL PRODUCTION, BARRELS: Year	ANNUAL PRODUCTION, BARRELS: Daily Average	Average Daily Production per Well During Year
1919	....	....	....	....	281,019	769	....
1920	....	....	....	....	7,275,809	19,993	....
1921	....	....	....	....	18,084,525	49,546	....
1922	2	....	88	....	11,891,030	32,578	....
1923	21	....	86	87	8,174,371	22,395	257
1924	54	....	261	174	13,589,611	37,130	213
1925	28	....	240	250	11,971,149	32,798	131
1926	14	....	245	243	12,292,754	33,679	139
1927	1	....	227	236	10,073,073	27,597	117
1928	....	....	210	219	8,107,198	22,151	101
1929	....	....	204	207	6,353,035	17,406	84
1930	1	....	212	208	6,572,379	18,007	87
1931	....	....	205	209	4,925,636	13,495	65
1932	....	121	195	200	4,537,461	12,397	62
1933	....	80	218	207	4,487,978	12,296	59
1934	....	115	168	193	3,345,772	9,167	47
1935	....	110	167	167	3,216,318	8,812	53
1936	....	127	151	159	3,194,445	8,728	55
1937	6	80	170	160	3,787,052	10,375	65
1938	2	82	170	170	3,886,718	10,649	63
1939	2	56	192	181	3,829,940	10,493	58
1940	....	56	197	194	4,427,223	12,096	62
1941	8	131	143	170	3,490,570	9,563	56
1942	6	53	212	177	4,363,936	12,829	72
1943	20	55	232	222	5,373,160	14,721	66
Total	165	....	....	....	167,532,162	.....	.....

* Average between numbers beginning and end of year.

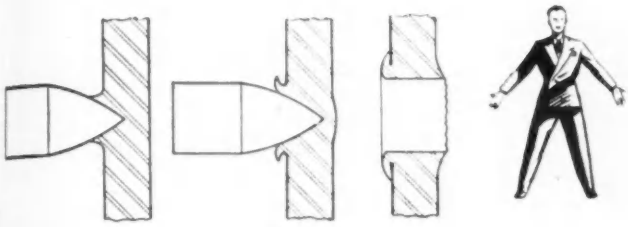
Here is the POWER



behind the PROJECTILE



that produces these cleaner



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Locations of wells, surface-spaced at 10-acre intervals and subsurface-spaced at 20-acre intervals require earth moving. Here a hill has been cut into deeply to locate well 25-2G. The road was laid by the Seabees. (Official U. S. Navy Photo.)

troversial implications of this relationship, by common consent, were thrust aside. It was obvious that the only practical approach to making this oil available would be for the company and Navy to pool interests and tackle the job jointly. In this spirit of cooperation, they gave themselves so whole-heartedly to the task of framing unifying agreement that in a matter of months there was effected an adjudication that would have taken years in peacetime. It required long and intricate negotiations, involved with complexities of technical determinations, and with administrative procedure that was highly susceptible to political prejudices. It is a tribute to the sagacity of both Secretary of the Navy Forrestal and Standard executives that, under stress of Congressional clamor and of extreme and often unfounded criticism, they succeeded in working out a concord that not only was mutually satisfactory but which also was acceptable to Congress itself.

Experiment of Interest

The Elk Hills operation constitutes an experiment in government-industry partnership which will be watched with closest interest. Those in posts of responsibility, both civilians and Navy officers, are highly conscious of this fact; and from the outset the guiding principle of the common effort has been to build a record of administration that will be a model of effective and harmonious accomplishment.

Both the Navy and Standard selected top-flight men to fill every position of authority. Navy officers who had donned uniforms only after years of practical experience in petroleum engineering and development, represent the service. Standard's representation is staffed with men hand-picked from the highest-rated personnel of its large organization, men with enviable records of proved ability and accomplishment.

Engineering problems and related fundamentals of planning, including estimation of reserves, have been assigned to an engineering committee composed of the following:

Commander V. H. Wilhelm, chairman; E. G. Gaylord, chief petroleum engineer of Standard, vice-chairman; V. O. Wankowski, of Standard; Commander H. P. Stolz; C. R. Burgess, of Standard, and Lewis McNaughton of De Golyer & MacNaughton, petroleum consultants acting for the Navy.

In direct charge of actual operations at the field are Commander Stolz, exercising direction for the Navy and Vic Wankowski, head man for Standard. With full jurisdiction over field procedure, they share responsibility on all decisions. Details of operations are under individual direction of assistants, one group from the Navy and the other from the company.

Elk Hills production figures, despite year-to-year irregularities reflecting various restrictions, already have reached totals that fix it as one of America's great fields. For years it has held the interest of California oil men, particularly geologists and engineers.

Description of Field

Lawrence E. Porter, Richfield Oil Corporation's assistant manager of exploitation, is among those whose long-continued studies of this field qualifies him to describe and discuss its characteristics. In the recently published Bulletin 118 of the Department of Natural Resources, State of California, is a special paper by Porter narrating its history and describing stratigraphy and structure. Descriptions which follow, have been quoted directly from Porter's digest.

Stratigraphy.—The exposed formations in the Elk Hills field are non-marine in character, consisting of unconsolidated gravels, sands, clays and marls of Pleistocene or late Pliocene age (Tulare), equivalent to the uppermost part of the McKittrick group.

Specify Dreadnaught

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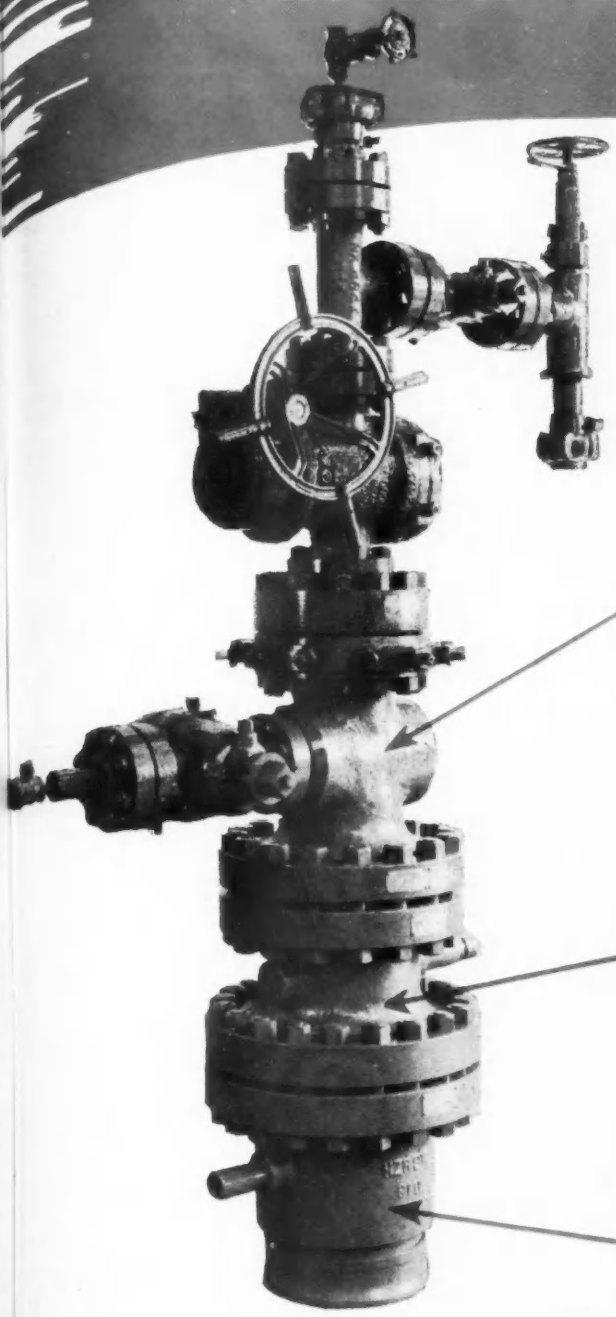

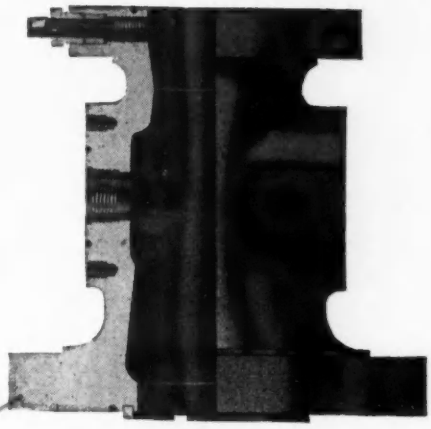

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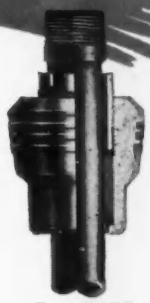

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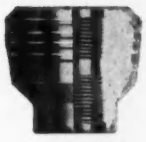

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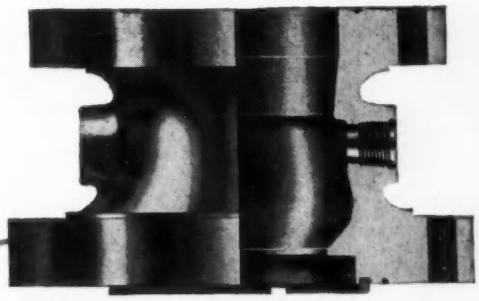

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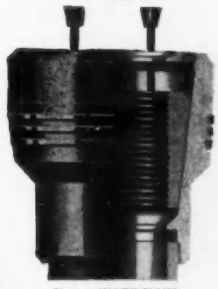

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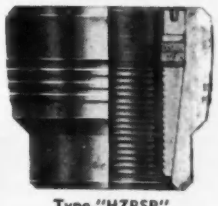

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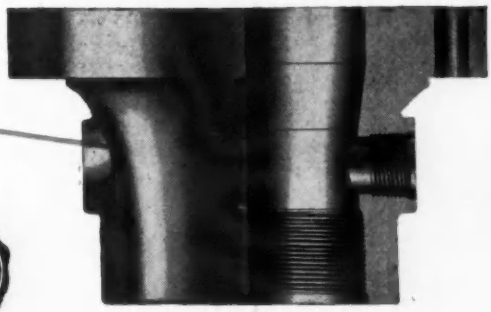

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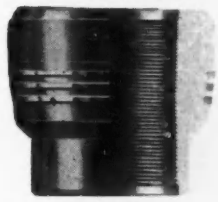

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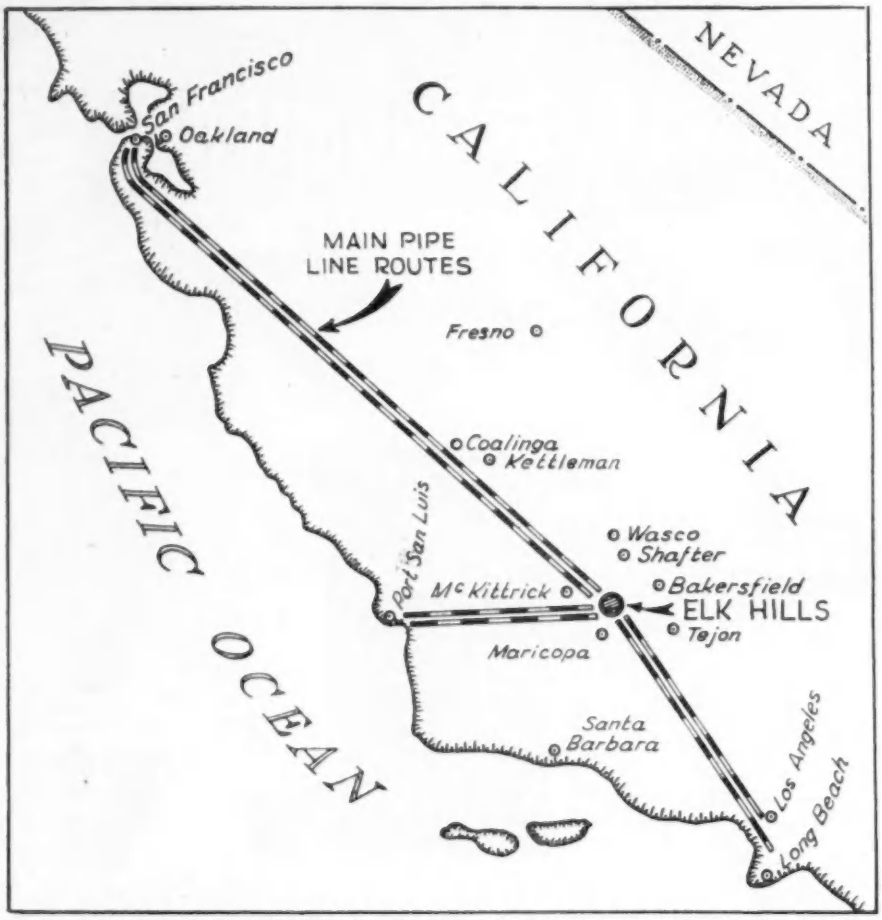


Major pipe lines connecting Elk Hills with refineries at San Francisco and in the Los Angeles area.

The surface configuration is typical "semi-desert topography."

Quaternary

The Quaternary alluvium around the boundary of Elk Hills consists of unsorted sands, gravels and silts, which conceal the underlying Tulare formation.

Pliocene

The Tulare formation (uppermost Pliocene) consists chiefly of non-marine deposits 2900 feet thick in the vicinity of Sec. 14, T.31S., R.24E., M.D.; in the central portion of Sec. 1, T.31S, R.23E., M.D., 875 feet thick; and on the north edge of the eastern portion of the field in the vicinity of Sec. 22, T.30S., R.24E., M.D., 2370 feet thick. The Tulare is separated into three parts: (1) upper zone, 250 to 300 feet thick, consisting of tawny gray shales derived from weathering of nearby formations in the Temblor Range, fragments of Maricopa (Miocene) shale making up a large portion of this particular phase; (2) middle, or second zone, grayish to buff-colored, more or less banded shales and sandy shales, slightly in excess of 200 feet in thickness; and (3) third, or lower tawny group, 215 feet in thickness, seen in a few of the more deeply eroded gulches.

The exact contact between the Etchegoin formation and the overlying Tulare is not known because of the lack of information from well logs. The Scalez bed, a definite marker found in cored logs, occurs about 2000 feet below the top of the Etchegoin.

The Etchegoin-Jacalitos (Pliocene) has been found about 8300 feet below the surface in the extreme easterly portion of the field. Core records from this deep test, however, have not been made available for general use.
similar shape some 15 to 20 feet above

Miocene

In most instances the Maricopa formation underlies the Etchegoin unconformably. In the Temblor Range to the West, it ranges from 2000 to 7000 feet in thickness. Pemberton (J.R.) believes the diatomaceous shales of the Maricopa to be the probable source of Elk Hills oil.

Scalez Bed Noted

Structure: The structure of Elk Hills field is anticlinal, the reflection of which is well shown in the erosional exposures. The elevation of the center of the dome varies from 1500 to 1550 feet, tapering to 300 feet at the eastern limit and to about 900 feet (above sea level) at the western border near the town of McKittrick. Approximately 700 feet of the Tulare non-marine sediments have been exposed. These beds gradually dip valleyward away from the flanks of the anticlines, and are buried in the surrounding valley alluvium. The anticline is elongated about three times its width, and the dome or apex occurs in the south half of T.30S., R.23E., M.D., or about two thirds of the distance west from the easterly limits of the topographic elevation. An outstanding correlative guide in interpreting the substructure surface has been a fish-scale-like fossil, Scalez petrolia, which is the operculum of a soft, shell-like gastropod. This marker exists in a fairly hard, compact, bluish-gray shale ranging in thickness from 5 to 10 feet. Minute gastropods known as Amnicolas usually accompany the Scalez bed in a the Scalez marker. The Scalez bed generally is found from 10 to 25 feet above the main producing oil zone in the eastern area of the field.

Development has shown a closed dome in the eastern area, one in the middle-western or Hay Carmen area, and one in the extreme west, known as the Hillcrest area. Subsurface correlations from well logs indicate subsurface strata are conformable somewhat to the surface features overlying them, except that the deeper beds increase in their dip away from the axis. The eastern area is marked by four northeast-trending faults, having displacements ranging from 50 to 200 feet. These faults have been determined largely from subsurface data from the wells drilled. The wells drilled into the zone of faulting generally have obtained little or no production. These faults have had a marked influence on the production of the several fault-blocks; oil gravity differences between wells of one fault block and another have also been marked. Undoubtedly faults having considerable subsurface influence will be found in the undeveloped portions of the field to the west.

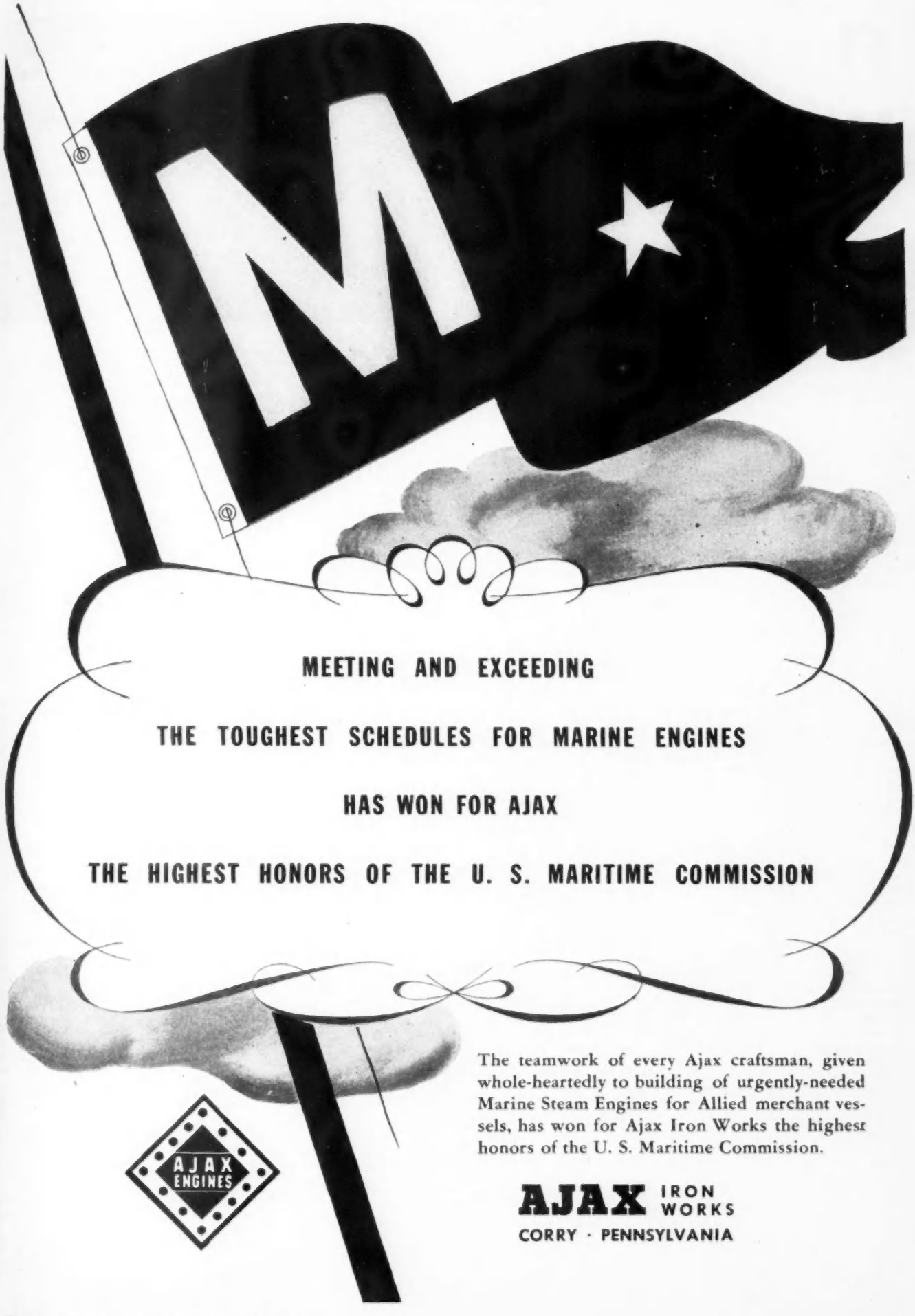
Productive horizons and kind of oil and gas:

Eastern Area

In this area oil gravity ranges from 14 to 26 degrees, and at least 75 percent of the oil produced is over 21 degrees gravity. Higher gravities are usually found in the higher structural positions. The productive zone ranges from 100 to 200 feet in thickness and consists of about 35 to 40 feet of solid sand; the balance of the zone is composed of interbedded sands and shales. The main producing zone occurs immediately beneath the Scalez horizon at depths ranging from 2750 to 3500 feet. The oil has an asphaltic base and is similar in most respects to oil of equivalent gravity found in the nearby Midway-Sunset field. Sufficient production history has now been accumulated to give a clear picture of progressive water encroachment within the oil zone to the extent that it typifies a model field for the study of the mechanics of water encroachment. Only a few clean-oil areas remain.

Western Area (Hay Carmen)

The absence of coring and the existence of only meager records have resulted in little information being available as regards the oil zones in this area. The gravity of the oil produced ranges from 21 to 53 degrees and averages about 35 degrees. While initial well-completion data are also incomplete, it is known that large gas wells and wells of gas condensate were completed in this portion of the field at depths ranging from 1800 to 3500 feet. The oil zones apparently consist of interbedded shales and sand. Recorded gas pressures at the surface have been as high as 1500 pounds. Several outstanding gas wells were completed on the Hay Carmen leases of the Standard Oil Company in Sec. 36, T.30S., R.23E., M.D., and Sec. 31, T.30S., R.24E., M.D. Observable natural repressuring has been noted in several depleted gas wells which have been shut in for a protracted period. This repressuring was doubtless caused by fluid encroachment up the structure to the low-pressure or depleted areas.



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Electrical Well Logging

PART 8

The Four-Electrode Method

The four-electrode logging arrangement, although less popular than the other electrical logging methods, gives curves which offer interesting possibilities. The most typical curves obtained with this arrangement are discussed in this article and compared with those given by the three electrode method

By HUBERT GUYOD
Development Engineer
Halliburton Oil Well Cementing Company
Duncan, Oklahoma

PREVIOUS discussions have shown a few limitations of the logs given by the three-electrode method: namely,

1. The apparent resistivity curves are, in general, much distorted.
2. When the object bed is thick, only one of its boundaries is sharply defined.

These limitations are found regardless of the type of electrode arrangement used, whether standard or inverted. This is schematically illustrated on Figure 8-1, which shows the logs obtained on a thick resistant bed with these two arrangements. By comparing these two curves, it can be seen immediately that each of them is a kind of rough complement of the other. In fact, when one is too low at a certain point, the other is too high at this point, and conversely. When one of them does not denote a boundary sharply the other does so, and conversely. If these two curves were simultaneously available, their average would, in general, give a log which would be much better than either component curve.

This is, basically, the principle of the four-electrode method, which automatically integrates a standard curve and an inverted one at each point of the bore hole. (Although the four-electrode method has been derived here as a special case of the three-electrode method, nevertheless, historically, it was known long before the latter, being proposed by Frank Wenner for surface exploration as far back as 1916. Its synthesis is given here only to help the reader understand its principle.) How this is done in practice will be understood by referring to Figure 8-2, on the left side of which are shown the two component arrangements. The polarity of the current at a given time is indicated on the figure; this polarity has been so selected that the two component signals at P_1P_2 have the same sign. On the right side of the figure is shown the composite arrangement with its four electrodes in the bore hole. From the preceding discussion, it is obvious that the arrangement of the four-electrode method consists of two current electrodes C and C′ placed at a relatively large distance from each other—more than 20 feet, generally. Between them are two potential measuring electrodes P_1P_2, usually symmetrically arranged with respect to CC′. The two current electrodes are connected to a source of current delivering a current I. Electrode C, for instance, is positive, and electrode C′ is negative. The potential difference V between P_1 and P_2 measures the combined effect of the two current electrodes. An inspection of Figure 8-2, where the polarity of the current and that of the potentials has been marked, will reveal that this arrangement will yield the integrated result desired.

The actual field operations are conducted as shown schematically on Figure 8-3, C, C′, P_1 and P_2 are metallic rings mounted on an insulated mandrel M suspended in the bore hole by means of a line comprising four insulated wires. Two of these wires W and W′ connect the current electrodes C and C′ respectively to the two terminals T and T′ of a generator G placed at the surface and delivering a current I. This connecting scheme automatically applies a voltage of opposite polarity and equal strength to C and C′. The two other wires W_1 and W_2 of the line connect the potential electrodes P_1P_2 to a voltmeter U. The distance P_1P_2 is, in general, made small compared to CP_1 for the reasons given previously for the three-electrode method. This distance is usually in the neighborhood of one tenth the distance CP_1.

Apparent Resistivity. It already has been shown that the specific resistance of a

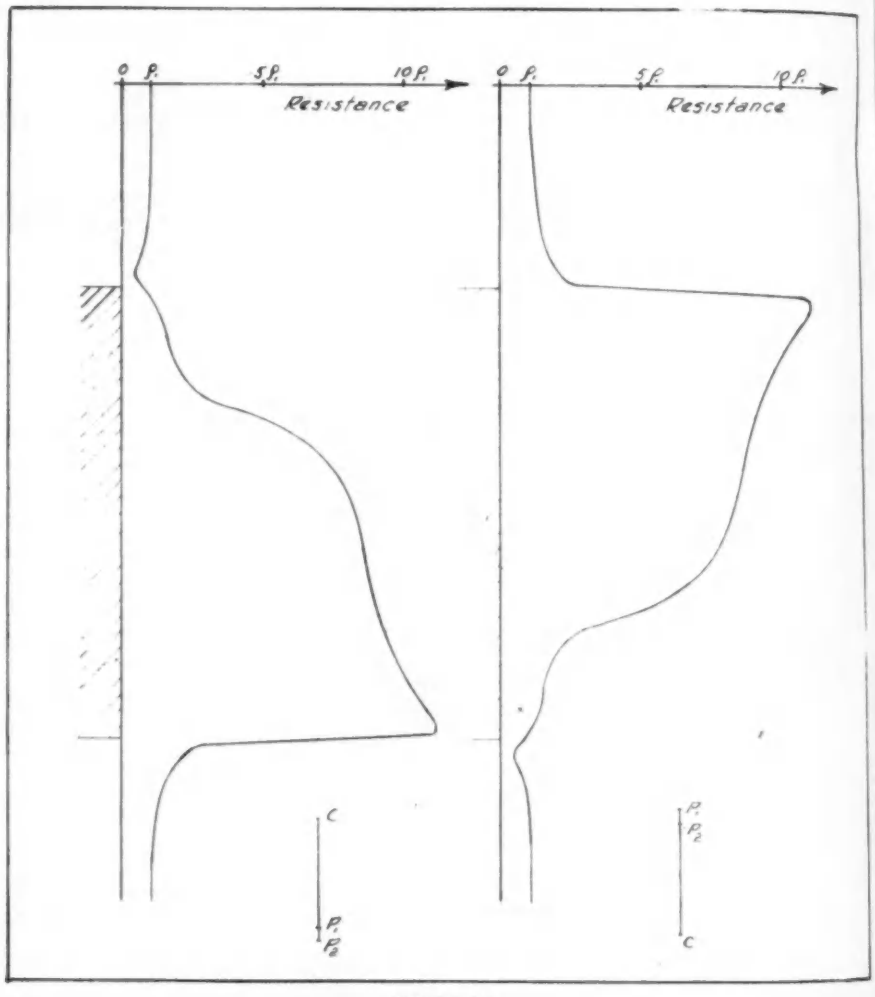

FIGURE 8-1
Comparison between the two three-electrode arrangements.

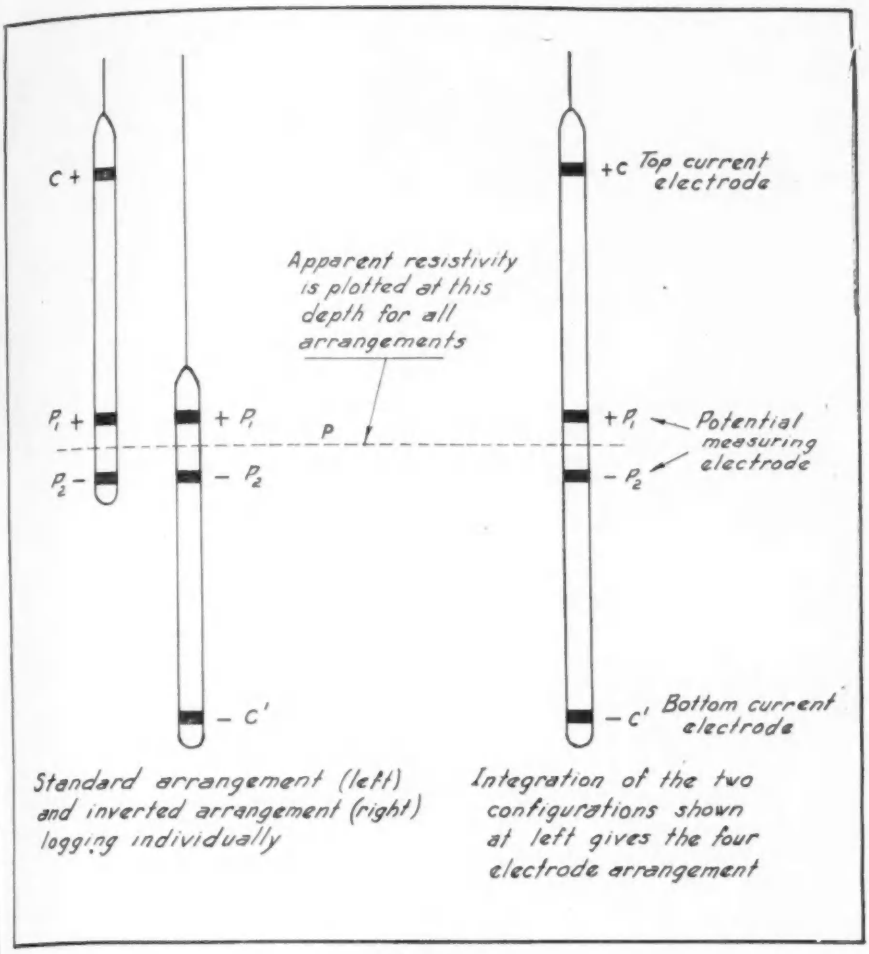

FIGURE 8-2
Principle of the four-electrode arrangement.

medium, when measured by the four-electrode method, can be expressed by a simple equation (4-5), which is re-written here for convenience

$$\rho = \frac{2\pi V}{I} \times \frac{CP_1 \times CP_2}{P_1P_2} \qquad (8\text{-}1)$$

This expression is subject to the condition that the medium is homogeneous. When the ground is heterogeneous, equation (8-1) may not be used to compute the specific resistance of any given bed. From this equation and the experimental values V and I it is, nevertheless, possible to compute at each measuring station an expression

$$\rho' = \frac{2\pi V}{I} \times \frac{CP_1 \times CP_2}{P_1P_2} \qquad (8\text{-}2)$$

which is called the "apparent resistivity," and which is the numerical value given on the electric log.

All basic remarks made previously on the theory of the three-electrode method apply, in general, to the four-electrode method. It is therefore not necessary to analyze them again here, and the discussion will be limited to the particular feature of the four-electrode arrangement and to the most typical curves obtained by its application.

Electrode Spacing. A four-electrode curve being the average of two three-electrode curves, it is evident that the so-called "penetration" of a four-electrode arrangement is the same as that of either component arrangement. As the length of an electrode spacing is quite often considered as being an approximate measure of the penetration, it is logical to define the effective electrode spacing of a four-electrode arrangement as being the same as that of the component arrangements, namely, as being equal to the distance CP, i.e., the distance between one of the current electrodes C and the center P of the pick-up electrodes (see Figure 8-3).

Resistant Beds

Figures 8-4 to 8-7 illustrate the experimental logs obtained in resistant beds of relatively resistivity $\frac{\rho_2}{\rho_1} = 9$ and whose relative thicknesses are 4, 1.14, 1, and 0.1 respectively, when both the influence of the bore hole and that of the pick-up span are taken into account. ρ_2 and ρ_1 denote the resistivity of the center bed (an oil sand, for instance) and of the surrounding formation (shales), respectively. The curves of these figures, as well as those which will be discussed later, have not actually been obtained experimentally. They have been computed by averaging three-electrode experimental curves (standard and inverted). The correctness of the superposition principle, however, was verified during other experiments, not discussed here.

Figure 8-4 is the four-electrode curve obtained on a relatively thick bed. It can be seen that this curve is really a much better image of the true resistivity than the corresponding three-electrode log. Both boundaries are sharply defined, and the maximum apparent resistivity in the center of the sand nearly equals the true resistivity value, the reading being equal to 8.4 ρ_1, instead of 9 ρ_1. A good approximation of the true resistivity can therefore be obtained by using the maximum apparent value measured in the center of the section. Similar results are obtained for all beds whose thickness is more than 2.5 times the electrode spacing CP. For thicknesses comprised between 2.5 CP and CP, the boundaries are still sharply defined, but a depression exists in the center of the bed as shown on Figure 8-5. The apparent resistivity near the center is therefore too low, which does not permit an estimation of the true resistivity of the sands having this range of thickness. The presence of this depression is easily explained by examining the experimental curves given previously for resistant beds logged by the three-electrode method, and by remembering that a four-electrode log is a combination of two three-electrode curves.

For thicknesses less than, or equal to, the spacing, four-electrode curves are almost identical to either of the component three-electrode curve. Consequently, both boundaries of the bed are sharply defined, and the apparent resistivity is lower than the true resistivity. If this latter value need be known, the procedure explained previously for the determination of the true resistivity of thin beds from a three-electrode log can be applied without modifications. The family of curves given in Figure 6-19 for this determination is fully valid when a four-electrode log is available.

The discussion of the critical thickness, which was illustrated by the charts of Figure 6-8 for a three-electrode arrangement, applies also to the four-electrode method; however, the numerical values given by this chart are not valid unless the bed thickness is less than the spacing. Correct values for thick beds can be obtained by simply averaging the logs given by the two types of component curves.

The critical thickness for a four-electrode arrangement equals the electrode spacing CP.

In the shale section surrounding thin resistant beds, two little humps are visible; one on each side of the sand. This feature can be seen on Figure 8-7, and is characteristic of a four-electrode arrangement.

Highly Resistant Beds. If the sand section is much more resistant than the surrounding shale—100 times for instance—the apparent resistivity log is also very good in thick beds, as shown on Figure 8-8. Both contacts are sharply defined, and the maximum reading nearly equals the true resistivity, the error being negative and of the order of 10 percent. This result obtains for all thicknesses down to approximately 2.5 times the spacing CP.

On thinner beds, the apparent resistivity decreases considerably, and an estimation of the true resistivity of such a bed is not possible in most cases. Both bed boundaries are still sharply defined, as shown by Figures 8-9, 8-10, and 8-11 corresponding to relative thicknesses of 1.14, 1, and 0.1 respectively. A depression similar to that described previously for beds whose thickness is comprised between CP and 2.5 CP exists also in highly resistant beds, and its magnitude is

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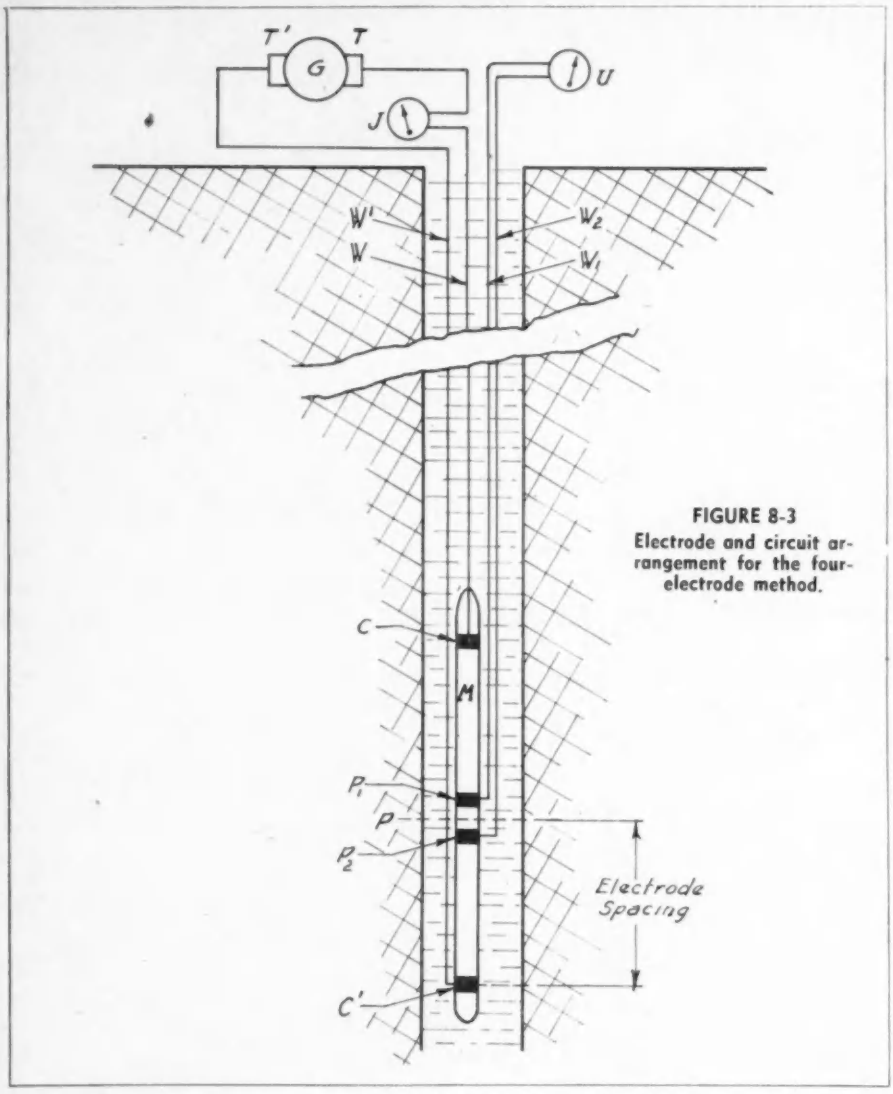


FIGURE 8-3
Electrode and circuit arrangement for the four-electrode method.

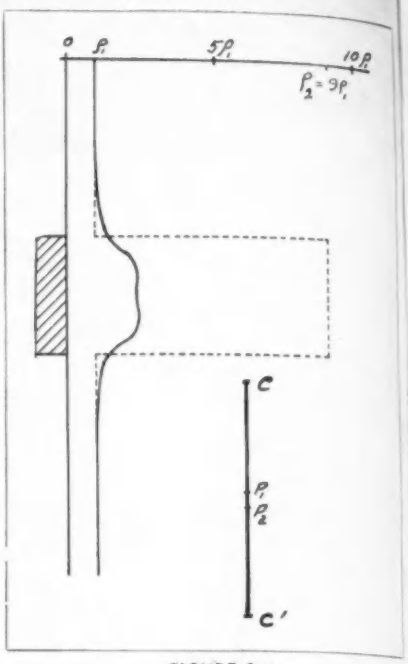


FIGURE 8-6
Experimental four-electrode curve in a bed of critical thickness nine times more resistant than the surrounding formation.

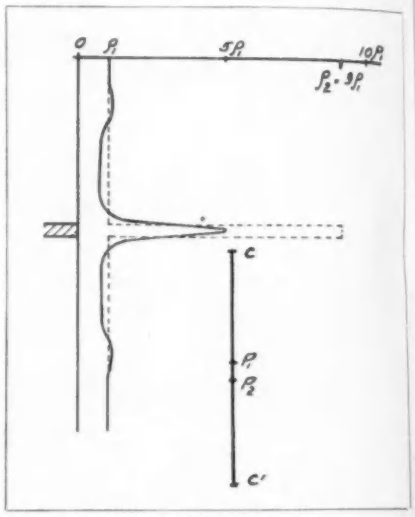


FIGURE 8-7
Experimental four-electrode curve in a very thin bed nine times more resistant than the surrounding formation.

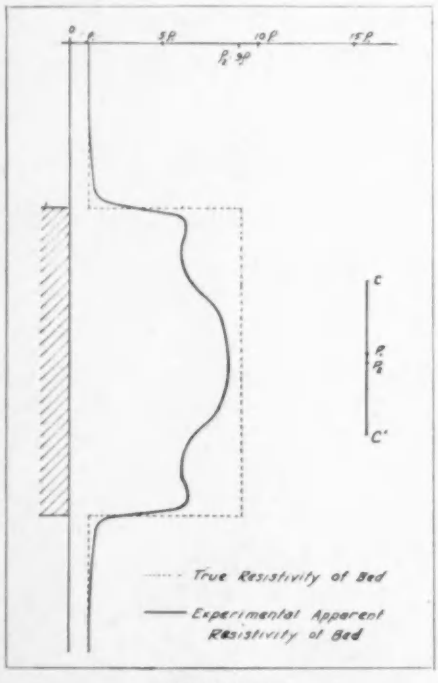


FIGURE 8-4
Experimental four-electrode curve in a very thick bed nine times more resistant than the surrounding formation.

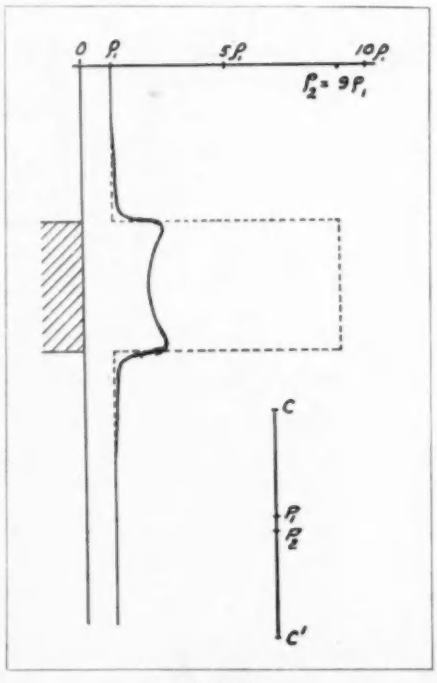


FIGURE 8-5
Experimental four-electrode curve in a bed nine times more resistant than the surrounding formation (bed thickness is slightly greater than critical thickness.)

considerably increased, as can be seen by referring to Figure 8-9.

A four-electrode curve being a combination of two three-electrode curves, it is clear that it will give a reasonably good picture of conductive beds. Figures 8-12 and 8-13 show the experimental curves obtained on two beds nine times less resistant than the surrounding formation, the relative thicknesses being 4 and 0.1 respectively. In thick beds, the apparent resistivity nearly equals the true resistivity, whereas, in thin beds, the two values diverge more. The bed thickness is sometimes difficult to estimate accurately, because of the low apparent resistance obtained in the shale section immediately above and below the sand.

Mud Invaded Sands. All that has been said previously regarding the logging by the three-electrode method of mud invaded formations of low resistivity

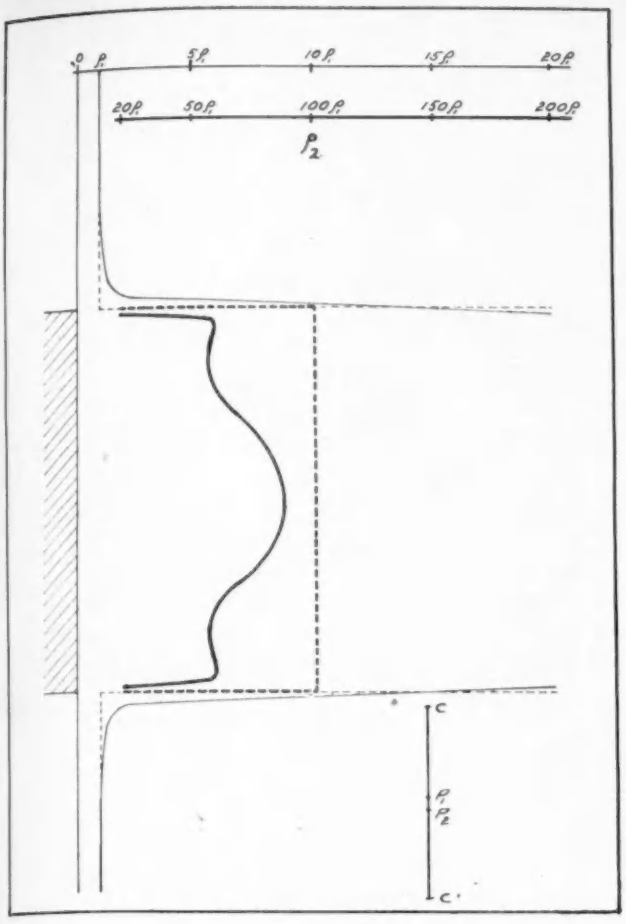


FIGURE 8-8
Experimental four-electrode curve in a very thick bed one hundred times more resistant than the surrounding formation.

applies fully to the curves given by the four-electrode method. No discussion of this topic therefore need be given here.

Features of the Four-Electrode Method

Limitations. 1. In a preceding article there has been shown on Figure 6-16 that a three-electrode arrangement gives a very distorted log in broken formations. This has been ascribed to the surroundings of the current electrode. A four-electrode arrangement having two current electrodes, instead of one, the number of distortions will, therefore, increase accordingly. Their magnitude however, will be reduced, in general, unless both electrodes happen to produce simultaneously a distortion in the same direction. A simple example of this increased number of spurious deflections is given by Figure 8-11, where two little humps H and H' can be seen in shales, one on each side of the sand. It will be remembered that only one hump is seen on a three-electrod curve obtained under identical conditions (Figure 6-14). The four-electrode method is therefore ill-adapted to the logging of very broken sections, especially when the numerical value of resistivities has to be computed.

2. Another important limitation of the four-electrode method is as follows: Referring to Figure 8-3, it can be seen that when the electrode carrier M is at the bottom of the hole, the point P, where the apparent resistivity is plotted, is situated several feet above bottom. It is therefore physically impossible to obtain a log at the bottom of the hole for a length equal to the spacing. For a similar reason, no log can be obtained immediately below the casing shoe, for a length equal to the spacing. When one remembers that long spacings are generally used with a four-electrode arrangement, it is clear that this limitation may become important. If, however, a three-electrode curve (standard arrangement) is also available, at least at the bottom of the hole, then there is no longer any serious objection to the use of the four-electrode method.

3. Electric logs being used extensively for fluid content determinations, it is necessary that the basic data required for such determinations, namely, the resistivity of permeable beds, be easily obtained from one or several curves of the log. When a four-electrode curve (made with a long spacing) is available, this information can be had in many instances. In fact, it has been seen that when the object bed is very thick, the true resistivity is given with reasonable accuracy by the maximum value read on the curve (see Figure 8-4, for example). When the bed is thin (equal to, or smaller than, the spacing length CP), and not excessively resistant, a good approximation is obtained by using the family of curves given on Figure 6-19 (see Part

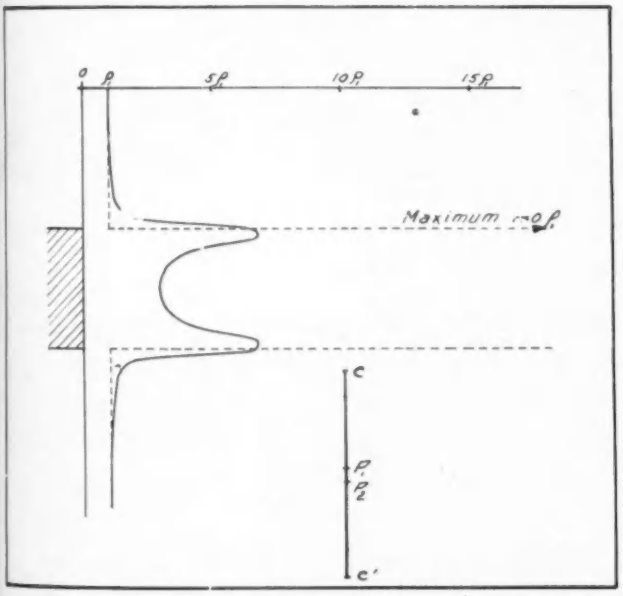


FIGURE 8-9
Experimental four-electrode curve in a bed one hundred times more resistant than the surrounding formation (bed thickness is slightly greater than critical thickness.)

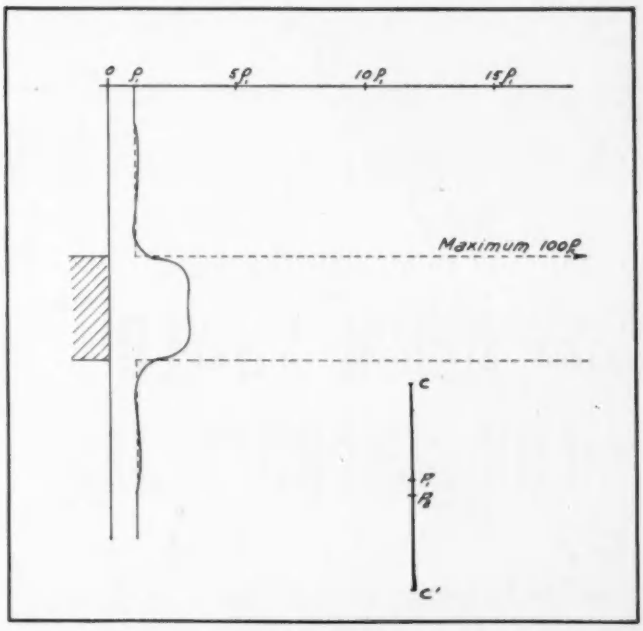
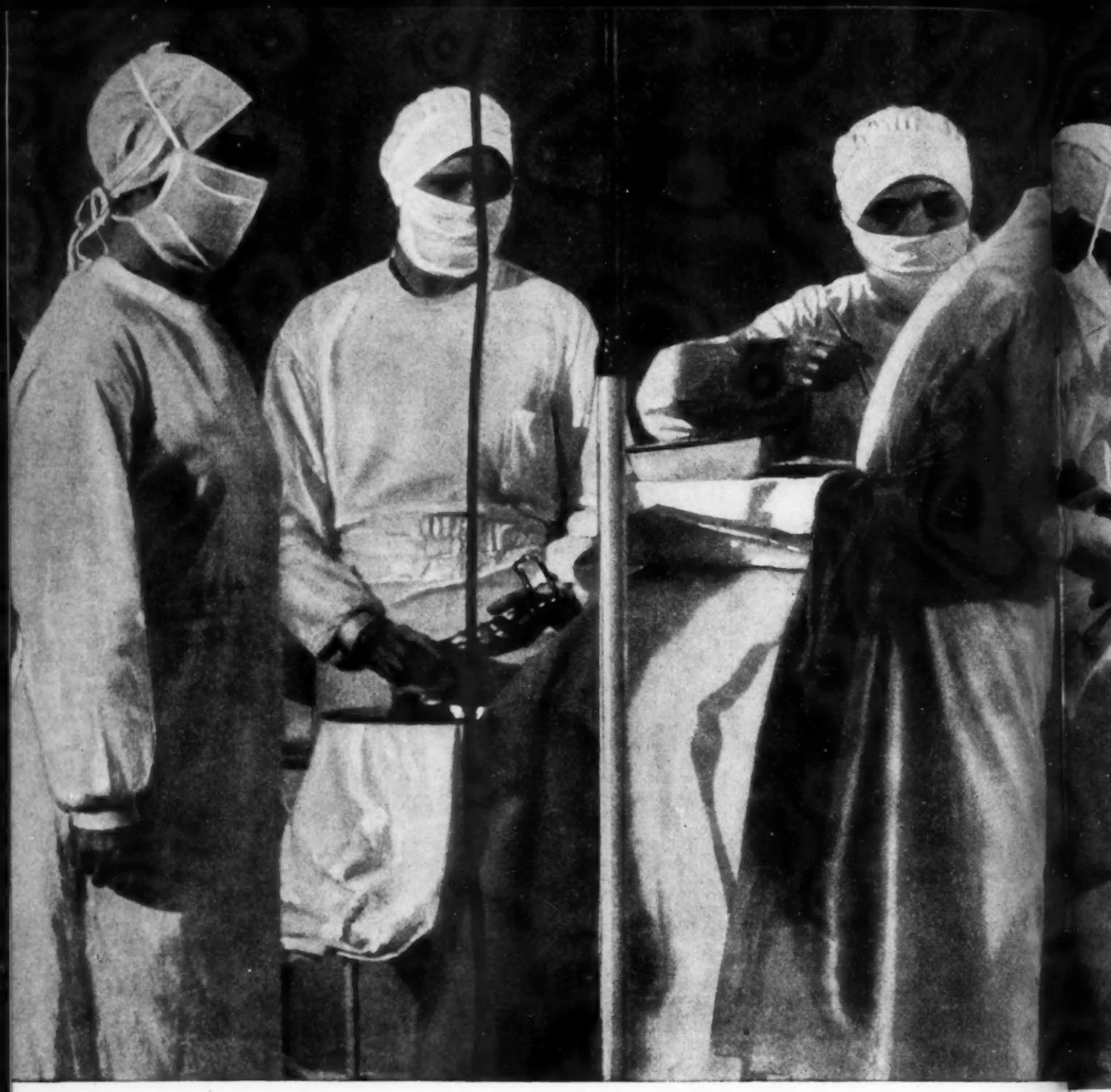


FIGURE 8-10
Experimental four-electrode curve in a bed of critical thickness one hundred times more resistant than the surrounding formation.



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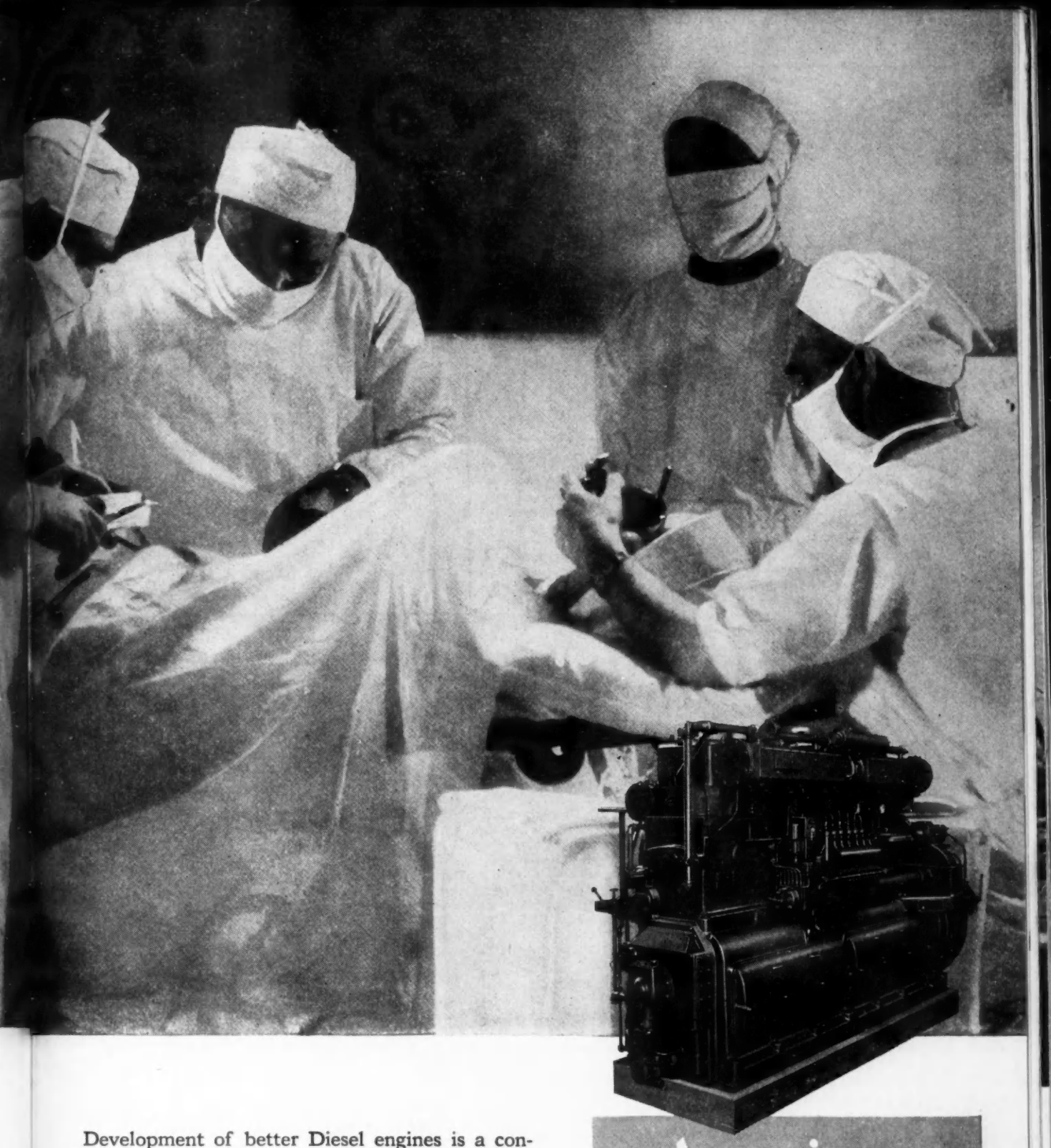

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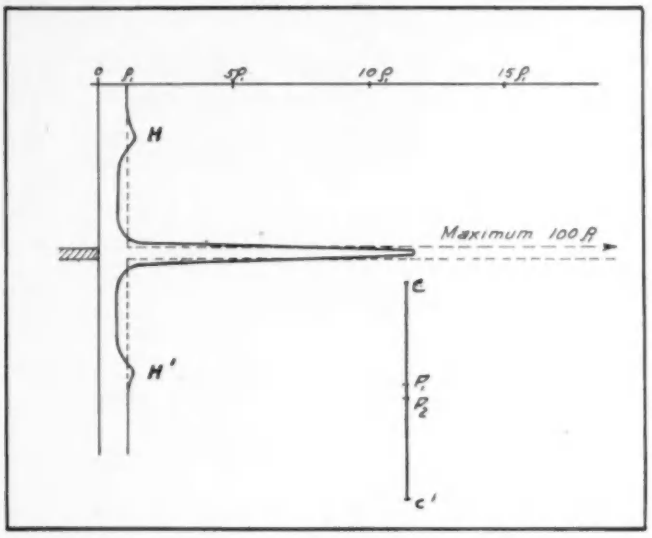


FIGURE 8-11

Above: **Experimental four-electrode curve in a very thin bed one hundred times more resistant than the surrounding formation.**

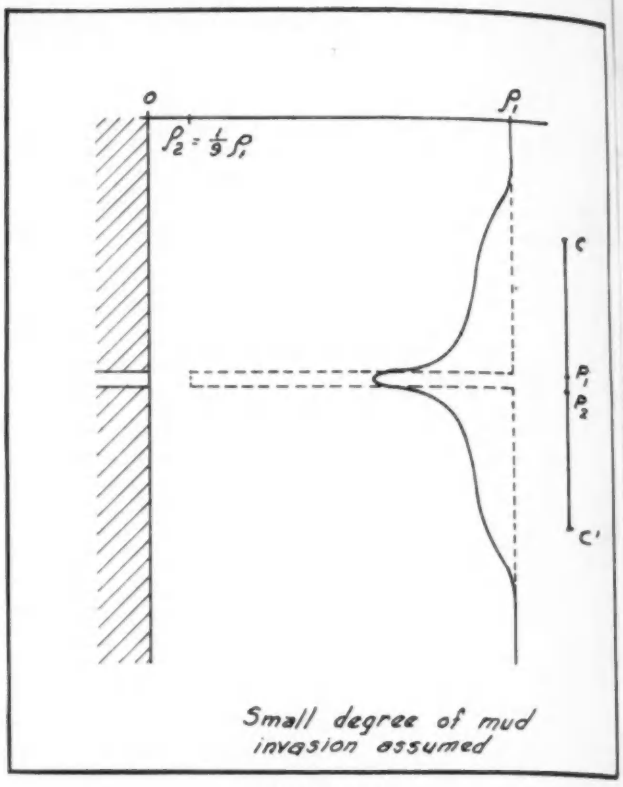


FIGURE 8-13

Experimental four-electrode curve in a very thin bed nine times less resistant than the surrounding formation.

6 of the series). However, when the bed is thin and very resistant, or when its thickness is comprised between CP and 2.5 CP, then there is no simple method for determining true resistivities from the four-electrode curve alone. This limitaton is not too objectionable, however, if other curves are available on the electric log. If the type of these curves and their spacings are adequately selected, it is usually possible to estimate reasonably well the resistivity of all beds from the composite log, unless such beds are considerably more resistant than the surrounding formations. When such highly resistant beds are found it is rare that a knowledge of their true resistivity could be used anyway for an accurate fluid content analysis.

Classification of the Four-Electrode Method. The brief discussion of the four-electrode arrangement which has been offered has shown that the method is nothing more than a particular application of the three-electrode arrangement. For this reason, the four-electrode method is classified as a three-electrode method. The electrode spacing used with this arrangement is usually equal to that of the three-electrode arrangement employed in the same area.

The Wenner Four-Electrode Arrangement. The name of Wenner is frequently associated with the four-electrode arrangement ("A Method of Measuring Earth Resistivity," by Frank Wenner—U. S. Bureau of Standards, Vol. 12, 1916, pp. 469-478). Many readers therefore will be interested to know whether the electrode configuration designed by the originator of the four-electrode method would give a satisfactory log if used for well logging.

In the arrangement introduced by Wenner for surface exploration, the three-electrode separations CP_1, P_1P_2, P_2C' are equal (see Figure 8-14). It will be remembered that, for well logging, it is desirable that the distance CP_1 be many times the separation P_1P_2. The

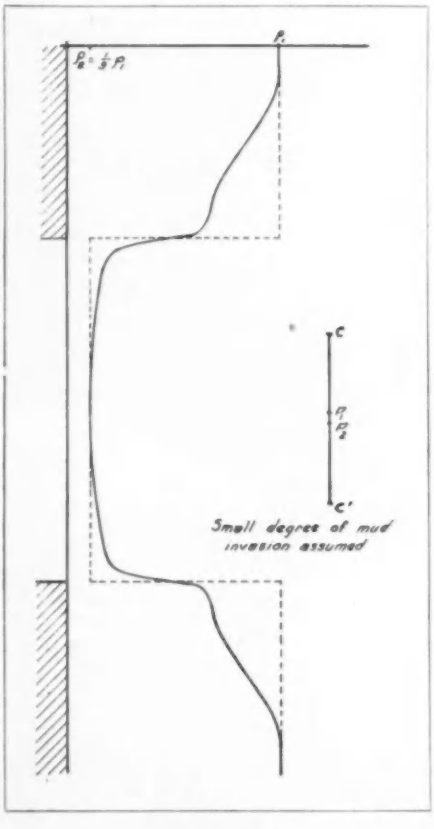


FIGURE 8-12

Experimental four-electrode curve in a very thick bed nine times less resistant than the surrounding formation.

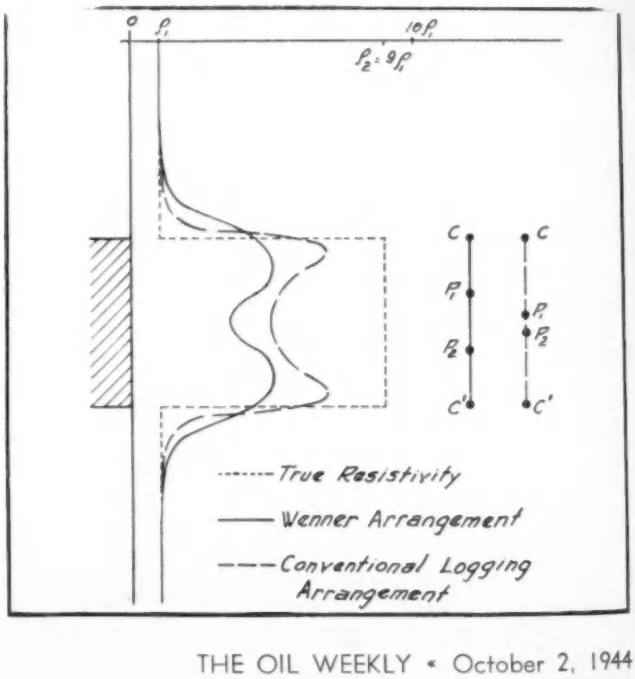


FIGURE 8-14

Comparison between curves obtained with the Wenner arrangement and with the conventional four-electrode arrangement.

TABLE 8-1

Fundamental Properties of Four-Electrode Curves (1)

	Resistant Beds			Conductive Beds (5)
	Very Thick (2)	Thick (3)	Thin (4)	
Approximate value of true resistivity.	Given by maximum apparent resistivity read on the curve.	Cannot be obtained simply.	Cannot be obtained by inspection. Can be determined from chart when bed not excessively resistant.	Given by minimum value read on curve. Good accuracy when bed is thick.
Bed boundaries.	Well defined at correct depth for all thicknesses.			Not always well defined, depending upon thickness and magnitude of mud invasion.
Approximate bed thickness.	Equal to apparent thickness measured on the log.			Equal to or less than apparent thickness, depending upon magnitude of mud invasion.

1. Data valid only for single beds placed in thick formation. Electrode spacing CP assumed to be large enough so that mud invasion and bore hole influence can be disregarded.
2. Very thick denotes thickness greater than 2.5 CP.
3. Thick denotes thickness comprised between CP and 2.5 CP.
4. Thin denotes thickness equal to, or less than, CP.
5. Any thickness.

Wenner arrangement is therefore ill-adapted to the logging of bore holes. This is illustrated on Figure 8-14, which shows the experimental curve (solid line) given by the Wenner method, and that obtained with an arrangement for which $CP_1 = 8\,P_1P_2$ (dash line curve), on a thick resistant bed. The dotted line represents the true resistivity of the section. It is obvious that the Wenner method produces a curve which is much less satisfactory than the other method; the apparent resistivity is relatively low and the apparent thickness too large. The failure of the Wenner arrangement to give satisfactory well logs does not mean that the method is of little value. The Wenner method was primarily designed to measure, at the surface of the ground, the apparent resistivity of beds approximately horizontial, i.e., parallel to the line of electrodes. This is a problem entirely different from that of logging. For this particular kind of problem the Wenner arrangement gives at least as good results as any other arrangement.

The Reciprocity Principle. By virtue of the reciprocity principle, curves identical to those given as illustrations in this article would be obtained if the intermediate electrodes P_1 and P_2 (see Figure 8-3) were used as current electrodes, and the outermost electrodes C and C′ were the potential measuring electrodes. This has been explained in some detail in a previous article (Part 4 of the series) and need not be discussed here again.

Use of Four-Electrode Logs

The four-electrode method is sometimes used, instead of the three-electrode method, to supply a curve having considerable penetration without excessive distortion in thick beds. If this curve could be obtained in the bottom section of the holes logged, it is likely it would supplant the three-electrode curve. It has been shown that this result cannot be obtained. Because of this important commercial limitation, the four-electrode method is seldom used unless a three-eletrode curve (standard arrangement) is also available, so that the bottom of the holes can be logged. This, of course, complicates the logging equipment and the field operations, and has prevented a greater use of the method, notwithstanding its interesting possibilities.

When a log at the bottom of the hole is not necessary (correlation wells), a four-electrode curve is recommended in preference to another type of log.

Summary of Properties

The fundamental properties of four-electrode curves have been summarized on Table 8-1 for convenience. These data apply only to single beds situated between formations reasonably thick and homogeneous. Similar data for broken sections cannot be given because no simple rules are available for such condition. Information regarding the determination of true resistivities apply only when long spacings are used, so that the influence of the bore hole and of the mud invaded zone of permeable formations can be disregarded.

As short four-electrode spacings are almost never used, the properties of such arrangements are not mentioned.

Survey Says Ample Oil Reserves for Centuries

The world's undiscovered reserves constitute a backlog of oil sufficient to supply civilization at the present rates of consumption for centuries, it is declared in a survey reported in *Ethyl News*, publication of Ethyl Corporation. Predictions of shortages, it is held, are misleading since they are based solely upon known reserves, excluding prolific potential supplies in the untapped areas of many lands.

While a petroleum price rise would increase production in the United States, it does not necessarily follow that higher prices for oil by the barrel would result in higher prices for automotive transportation by the mile or by the ton, the survey points out. Continuing progress both in petroleum chemistry and in automotive design and manufacture, it is explained, are enabling car and truck owners to obtain more miles per gallon of gasoline.

"Our present reserves are estimated at 20 billion barrels which can be produced by the means we are now using and at a cost that would be profitable with prices now in effect," the survey says. "Actually our known oil in the ground is nearer 100 billion barrels, much of which could be recovered by some new method if higher prices were established."

"It is not unreasonable to assume that the world's undiscovered reserves are at least equal to and possibly several times as great as today's known reserves. When prices warrant the trouble, these additional reserves will be located. There never has been a need for oil that already available sources could not supply.

"No country has been completely explored for all its possibilities. That even goes for the United States where the wells that have been drilled are numbered in the hundreds of thousands. In countries of greater area only an infinitesimal fraction of that number of wells has been drilled."

Promising areas yet to be exploited include the vast geosyncline extending in a great arc from Trinidad down into Argentina, the survey adds. The area covered by eastern Colombia, Ecuador and Peru and possibly western Brazil is regarded as the most likely for the future development.

"Western Canada has a belt running from the United States border through Saskatchewan, Alberta and the Northwest Territories to the Arctic Ocean, which is expected to yield much oil. Alaska is another western hemisphere region that may become an oil producer. Still another prospective oil area is the East Coast of the United States where oil companies have leased millions of acres from Florida to New Jersey.

"The Middle Eastern countries of Iran, Iraq, Saudi Arabia and Kuwait have an estimated 15 billion barrels of oil—30 percent of the known world reserves today. North and east of the Persian Gulf fields is Russia, with vast areas of likely oil land. A belt beginning at the Indian Ocean and running along the Afghanistan-India border, across India and down the eastern shores of the Bay of Bengal is prospective oil territory.

"Production of 3000 barrels per day has been developed in the interior of China by three American oil men working for the Kansu Petroleum Administration. Their success with makeshift equipment gives China ample reason to hope for ultimate oil self-sufficiency. Farther east are the Netherlands and British East Indies, where oil has been produced for years and where there has never been great emphasis on exploration."

Ignoring all potential sources of motor fuel other than earth-trapped pools of liquid petroleum, the survey concludes, there is still no basis to fear for the future of the gasoline engine.

Industry's Future

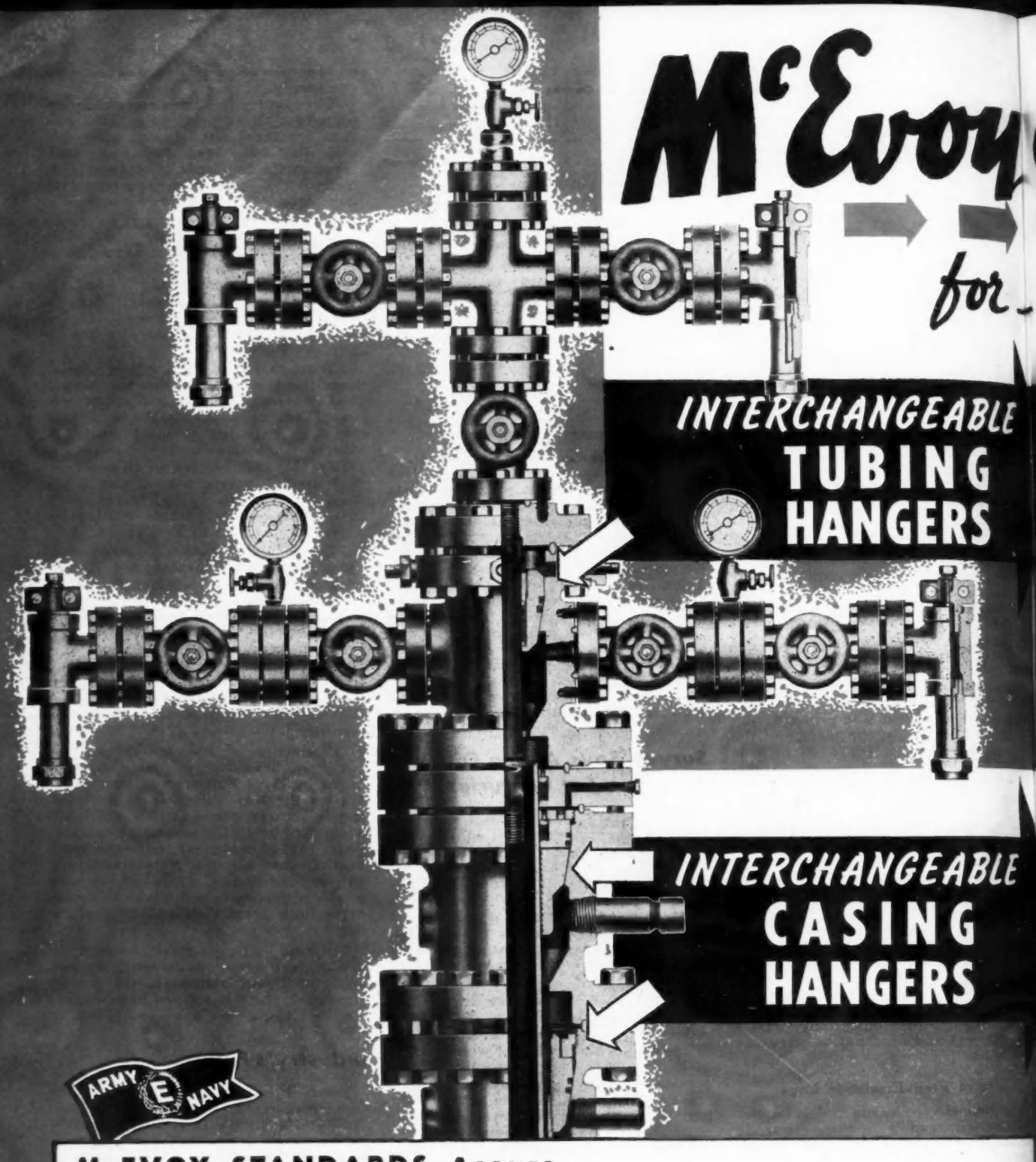
James F. Lincoln, president of The Lincoln Electric Company, discussed: "Industry's Future If It Follows Present Trends" and "Private Enterprise versus Feudalism," at public forums at Tulsa, September 15. The talks were sponsored by the chamber of commerce, the committee in charge including O. W. Maloney, Maloney Tank Company; J. Walker, National Tank Company; Don Bowers of W. C. Norris Manufacturer; Tom Schuetz, Braden Winch Company; Don Hinderliter of Hinderliter Tool Company, and R. L. Looney, The Lincoln Electric Company.

Public Relations Meet

The National Association of Manufacturers will sponsor a public relations conference in the Biltmore Hotel, Los Angeles, October 3 and members of the Oil Producers Agency of California have been invited.

McEvoy C

for _ EVER



McEVOY STANDARDS *Assure*

Complete Safety—Trouble-Free Installation—Complete Flexibility

Dependable Raw Materials
Proper heat-treatment is accorded all McEvoy equipment where this treatment will add to the safety of the equipment. Heat treating assures A. P. I. recommended tensile strengths and safety factors even with the National Emergency steels which all manufacturers are now using. Close control of castings is maintained through the medium of X-Ray. There are no hidden flaws in McEvoy well head equipment.

Modern Machinery
The McEvoy plant contains machine tools which are among the finest in the world. These tools are turning out a steadily increasing flow of McEvoy equipment for use in oil fields everywhere. They permit us to guarantee you prompt delivery of the right equipment for your job.

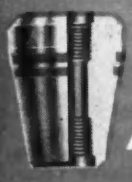
Rigid Inspection
Every piece of McEvoy equipment is individually inspected to meet the close tolerances and specifications set forth by McEvoy engineers. This inspection includes Rockwell and Brinnell tests for proper tensile strength; gaging for proper sizes; chemical tests for proper metal compositions and Durometer tests for correct rubber hardness. These inspections guarantee McEvoy equipment to be correct as specified.

Pressure Tests
Each McEvoy well head assembly is subjected to thorough pressure tests before the assembly is shipped. These pressure tests correspond in all instances to A. P. I. specifications and are conducted under the procedure as set forth by the Association of Well Head Manufacturers.

CHRISTMAS TREES

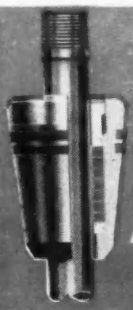
FOR COMPLETE SAFETY

EVERY DEPTH . . EVERY PRESSURE RANGE . . EVERY TYPE OF COMPLETION



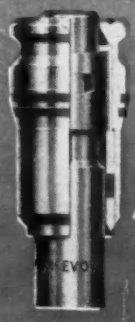
ALB

Threaded mandrel hanger for use where completion methods do not require a specialized hanger.



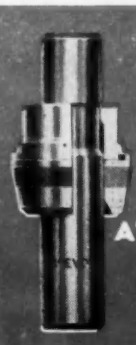
AFB

Developed especially for dual completions or where production packers are set. Permits well to be washed in under full pressure control without necessity of blow out preventers or back pressure valves. Polished joint allows movement of tubing under pressure.



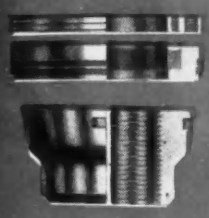
ATSJ

For screen and liner packer settings. Permits tubing to be raised one joint for final suspension after washing screen and setting packer.



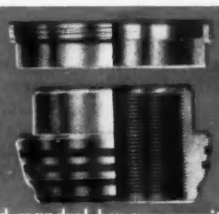
ATSC

Permits running and landing of tubing through assembled christmas tree. This hanger is designed to permit any method of well completion.



LHCS-1

Affords a non-welded seal for utmost safety. Slips may be locked together and landed through preventers if desired. This hanger is highly desirable where N-80 pipe is being set, due to difficulty of obtaining a satisfactory weld on this class of pipe.

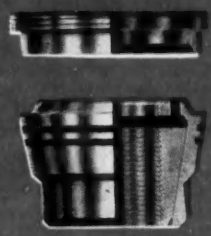


LHCH

Threaded mandrel hanger permits landing of casing through preventers and is satisfactory where close spacing of pipe is not necessary.

LSE

The Type LSE Flange may be used above any McEvoy Casing Hanger as an auxiliary seal. This flange permits field testing of both upper and lower seals and means are also provided so that both seals may be repacked under pressure.



LHCLWS

The LHCLWS Casing Hanger utilizes slips for suspension and welded seal. Slips are assembled inside housing and complete assembly may be landed through blow out preventers.

McEVOY CASING and TUBING HANGERS PERMIT ANY TYPE OF COMPLETION

McEvoy COMPANY

Cable Address: McEVOY, HOUSTON HOUSTON, 1, TEXAS

Shell Hangs Out Welcome Sign for Ex-Servicemen

Company goes beyond legal requirements in assuring former employes jobs commensurate with their skill; disabled veterans to receive best possible positions

"ABOUT the men who will come back, will we be forced to go on relief, or will we be accepted as regular, permanent employes? Do we have to start all over as we did at first?—Will my job be waiting for me?" So wrote two former employes of Shell Oil Company, Inc., one a Marine sergeant in the Pacific, the other a captain in the Army.

These and similar questions asked by other former Shell employes, now in military service, put the question of postwar opportunities for ex-servicemen squarely up to the management. Shell Oil Company, however, was not prompted to action by these questioning letters, for action already had been taken.

As a matter of fact, the basis of policy toward former employes who have been serving in the armed forces, by management, is set by law. They have to be reinstated in their former jobs if they wish to be and if they are physically able to perform the duties.

The question of the welfare of former personnel returning from the war is uppermost in the minds of most employers, has been in fact since the day war was declared. As these men return from active battle service, the question is more deeply emphasized and policy has to be put into practice. Shell Oil Company has been alert to the necessity of preparation for the problem, and in July, of this year, set forth its plan for reemployment of returning veterans. The plan is discussed in detail in the August issue of *Shell News* from which the following information is taken.

Aid Adjustment

In giving details of the plan to employes, Shell management said, in part " . . . the primary objective of the reinstatement program is to provide a job for every qualified employe. In addition, we must be prepared to make the veteran's return to employment as easy as possible and to assist him to make the necessary adjustment to civilian life."

The Shell plan includes every employe who is eligible for job protection under the company's military leave policy, serving in any branch of the United States military service, including WACS, WAVES and SPARS. Any former employe honorably discharged from military service who makes application for reemployment within 40 days after discharge will be eligible for reinstatement in his former position, "or one of like seniority, status and pay, if he is able to carry on the functions of such a position."

Realizing that many men have gone into service from jobs held by their colleagues who preceded them into the service, the company specifies that "if the employe was transferred or promoted into a position as a replacement for another employe on military leave, restoration to the former job may mean the one held prior to the transfer or promotion."

To try to make use of increased skill or additional ability developed by men during their period of military activity, Shell emphasizes that in such cases serious consideration will be given "not only to reinstate qualified employes in positions at least equal to the ones they left, but to advance them to such positions of greater responsibility as their qualifications and opportunities will permit."

Recognizing the change in status of some employes through injuries, the reinstatement policy considers such handicaps with liberality. It provides that an employe who is disabled and cannot qualify for his former position or a position of like seniority, status and pay, "shall be assigned to the highest possible job commensurate with his ability to perform the required duties."

Seniority Rights

On the question of starting over again, and of seniority rights, Shell has taken the trouble to be very specific. All seniority rights accumulated during the employe's leave of absence will be considered. In addition, each veteran's experience and qualifications will be reviewed and consideration for higher positions on the basis of ability and seniority will be given.

The whole program is to be coordinated and implemented by a serviceman's committee in each unit of the company's organization. Representatives of top management will serve on these committees. These representatives will be acquainted with the people and conditions in their payroll center and will look after any questions which may arise. The entire program and matters of fundamental nature not covered by established policy or procedure will be coordinated by the head office personnel department, and also by a group of senior members of the head office executive staff.

Returning veterans will be welcomed by the responsible department head or local manager of the department or division where he was employed when he left for the service. "The veteran will be asked about his training and experience in the armed forces, with particular reference to any specific skills acquired during miltary service, in order to determine whether he may be qualified for special or additional duties with the company.

"Although it is expected that in most cases the employe can be returned to work with no physical restrictions, there will be a physical examination to determine any limitations, and to assist further in placing the employe in a suitable position. In those cases where an employe may require polishing up on rusty skills, preliminary on-the-job training under experienced supervision will be given to help the employee make the change back to industrial work. Special consideration will be given the handicapped and those employes requiring rehabilitation or vocational training."

All Benefits Automatic

The veteran will be returned to the payroll at the regular rate of pay applicable to the job to which he is assigned. He will automatically receive the benefit of any general increases which he would have received had he remained on the payroll.

All of Shell's benefit plans including the pension and provident funds, disability benefit plan, sick leave, and group life and income protection insurance plans will be available to returning veterans on the same basis as if their services had not been interrupted.

Shell management points out that the plan as now set up is only the first step to assure "prompt and equitable consideration of every returning veteran." From time to time there will be other announcements to deal with specific phases or developments of the reinstatement program. "It is not going to be easy for those who have been practicing the arts of war on a 24-hour-day basis for these months and years to transform almost overnight to the routine of the business world," the announcement states. "Adjustments will be necessary, some more difficult than others, but in making this adjustment, every returning Shell man and woman can look not only to the assurance of the company's program, but also to a deep and sincere welcome from their fellow employes."

Geological Survey Makes Study of Arbuckle Lime

Crews from the United States Geological Survey and the Oklahoma Geological Survey are making a detailed study of the Arbuckle limestone in the Wichita and Arbuckle mountains in southern Oklahoma. From the mountain areas the work will extend to the oil-producing areas of central and northern Oklahoma to obtain complete subsurface data. The work continues surveys initiated by Dr. C. A. Merritt, Dr. Charles E. Decker and others of the geological department of the University of Oklahoma.

☆

NATHAN APPLEMAN, doing business as N. Appleman Company, has removed his offices from Wichita, Kansas, to 120 Broadway, New York 5, N. Y. He will continue in oil drilling and exploration.

Small Booster Stations Used to Collect Vapors

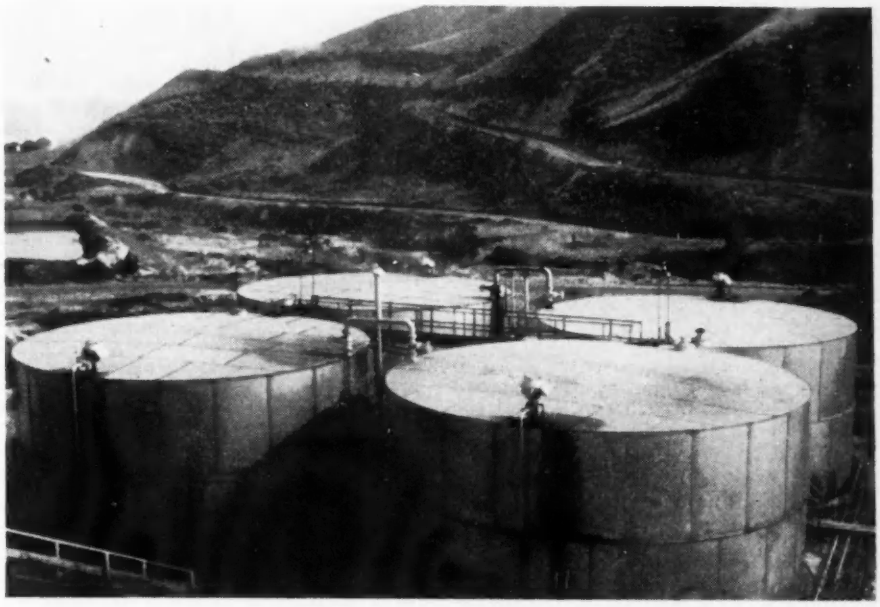
Cooperative program in California provides efficient system of gathering valuable light vapors on leases

THROUGH a cooperative program between oil producers and gasoline-plant ownership, the Del Valle field in California has been provided with a series of small booster stations which remove all light vapors from lease storage. Each battery is provided with a self-contained gas-engine-compressor unit, which is semi-automatic in operation.

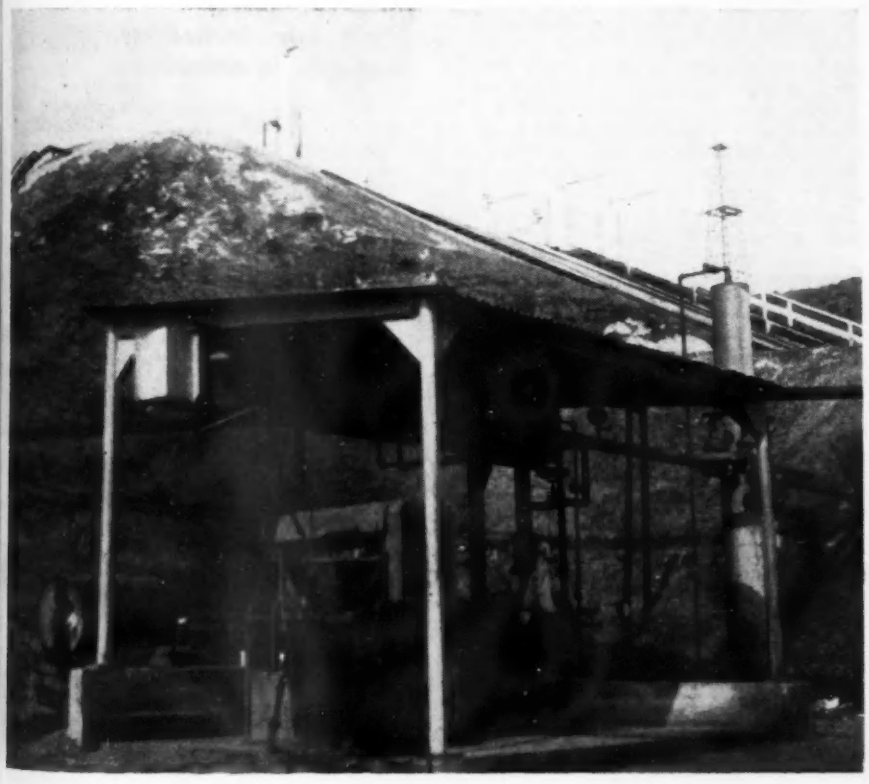
Each unit is built on a skid base. Each consists of a four-cylinder, water-cooled gas engine, which through V-belts drives a double-acting single-cylinder compressor. Through a system of piping, pressure relief valves, vacuum breakers and suction-pressure regulators, vapors are removed as they come into the traps or as they are released from storage.

These installations recover the light hydrocarbons, which otherwise would be lost through relief valves on lease storage batteries or through escape from other producing equipment.

Water for cooling the units is piped to all leases and taps are provided at each booster with an adequate amount of cooling water, which is admitted to the cooling system periodically as the operators make infrequent visits to the installations. Water for engine cooling is contained in radiators that require addition only as evaporation takes place. A steel reservoir is installed above the machines, suspended by roof trusses, for thermo-syphon circulation through the jackets. These boxes have sufficient capacity for maintaining relatively low temperatures in the compressor, admitting hot water at one end and releasing cooled water at the opposite end. Travel throughout the length of the boxes is sufficient to reduce temperatures so that the jackets are never above efficient operating conditions.

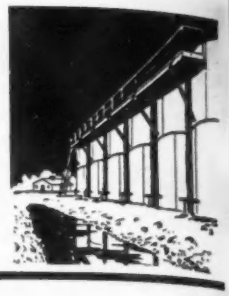


Battery of field tanks equipped with vapor saving devices so that small compressor can recover valuable gases for processing in gasoline plant nearby.



Cooling water for the compressor is circulated through the radiator attached to the roof of the shed which protects the field unit. The upright vessel outside the housing is a separator to prevent liquids from entering the compressor.

OPERATING HINTS *For Production Men*



Positive Actuation Insures Jack Hook-Up

An inexpensive yet positive-acting and easily operated hitch for connecting stripper well rod lines to the central power plant consists of the double hook and tie-back loop similar to those shown in the photograph. At the point where the rod line emerges from the plant, a short section of 8-inch casing is set in concrete, the pipe being given a slight back slant better to withstand the heavy pull to which it will be subjected when the well line is tied to it. Near the top of the exposed top of the pipe is affixed a sucker-rod U-shaped loop, hinged to the pipe with a long bolt which runs through from side to side. The connecting link is made of a piece of 1½-inch round steel rod forged into a loop with flattened hooks on each end, one of the latter looking upward, the other downward, and the lower being several inches longer than the other. The loop of the double hook is permanently linked to the well end of the rod line.

JACK POWER LINKAGE

In normal operation the upper hook is connected to the power plant, with the short rod from the plant riding on a greased board secured to the top of the casing. When the well is to be taken off the plant, all that is necessary is to lift the sucker rod loop into position to engage the lower hook, and when the plant pull-rod then disengages itself from the upper hook on the return stroke, it is lifted off and placed in a prepared slot on the board rest to prevent it from further engaging itself on the well-line hook. A hand-hold loop welded to the end of the plant rod provides protection from possible pinched or mashed hands when the pumper lifts the moving parts.

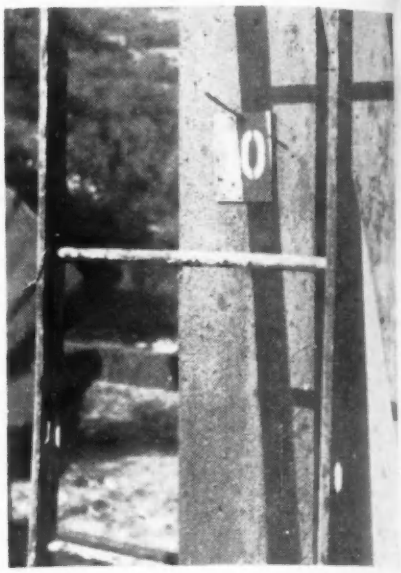
Major advantages of this system include the inexpensiveness of the materials which can be fabricated and assembled in the shop; the ease and speed with which the wells may be disconnected; and the positiveness of action, which may be handled by any pumper or field hand with no auxiliary tools or fittings commonly used for this method of connecting wells to the jack plant.

Stroke Indicator Improves Stripping

In a stripper field it is highly essential that each well be produced at an optimum speed and stroke at which point the equipment just handles adequately the volume of fluid that enters the hole. This rate may be determined through long observation of well characteristics or by the engineering staff through bottom-hole pressure studies, but the important point is that this rate of pumping speed must be rigidly adhered to by the production field men.

STRIPPER OPERATION

Since the memory or judgment of the field men usually cannot be relied upon when dozens of wells are involved on a lease, each well requiring a different rate of speed and stroke, one major company has adopted the practice of providing a number of small plywood or masonite-type tags on which numbers are painted. One of these tags, bearing the appropriate stroke and speed, is hooked over a pin on the sampson post, to remind the pumper constantly of the correct conditions when he starts a well following shut-down for lubrication and service periods. Since length of stroke cannot ordinarily be changed in the field without orders from the office, that factor can be relied upon to remain constant. Extended life of equipment and assurance that each well is producing its maximum, has many times repaid the small initial cost of inaugurating this system.



Numbered tags, displayed on post, indicate to pumper best rate for operation of each well unit.

Line Run Indicator Speeds Workovers

A matter of some concern to the pulling unit operator is the problem of cutting to a minimum the time consumed in running in and out of the hole. Running the unit continuously at top speed would be desirable, but of necessity it ordinarily must be slowed down some time in advance of the bailer or tool hitting bottom, or when coming out of the hole, appearing above the casing head.

SERVICING CONTROL

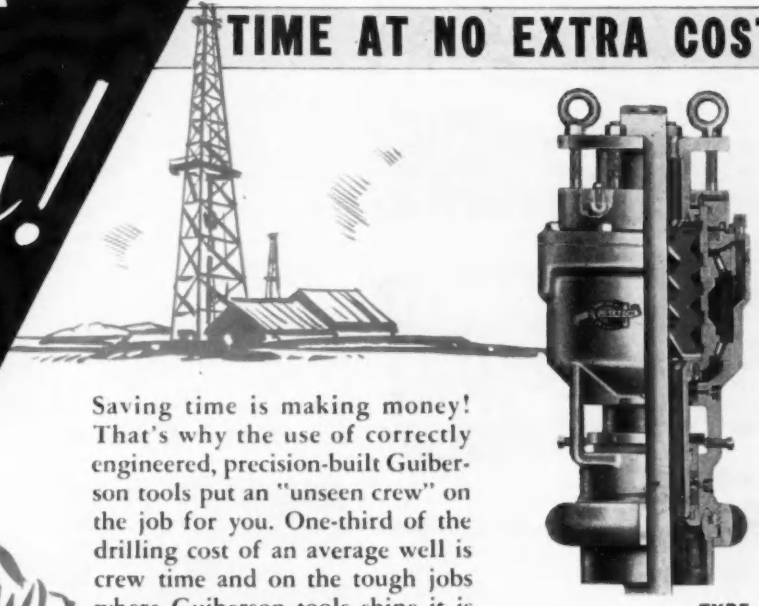
One operator partly solves this problem by suspending an object above the spooled line to indicate in which *layer* of spooled line he should begin to look for the "flag" which will in turn tell him to within a few feet the location of his tool. Thus, in coming out of the hole, the hoist operator need not concern himself with slowing down occasionally to look for certain warning flags or dabs of paint that ordinarily are put on the line. There is then ample time in which to slow down when he knows he is within a half-layer or so of being at the top, and he can run the unit at top speed until that point arrives.

Similarly, on a well requiring considerable bottom-hole work, another ob-

Disengaging and reconnecting of well rod lines to central power pitman links is simplified by use of double hook and stop links so arranged as to eliminate cause of accidents.

AN UNSEEN CREW ON THE JOB FOR *You!*

GUIBERSON DRILL-ING HEADS CUT COM-PLETION AND CLEAN-OUT TIME AT NO EXTRA COST



TYPE E-1

Saving time is making money! That's why the use of correctly engineered, precision-built Guiberson tools put an "unseen crew" on the job for you. One-third of the drilling cost of an average well is crew time and on the tough jobs where Guiberson tools shine it is far more than that. The Guiberson Type E-1 rotating drilling head is ideal for cleaning out wells after shooting. Helps make better wells in one-tenth of the time. Head provides extra safety for crew and protection against blow-outs. In drilling deep, high-pressure wells tool enables operator to use much lighter drilling fluid. Bottom hole pressures are controlled at the surface. The special rubber packing provides positive seal around any shape. Easy and simple to operate, the Type E-1 is a proud member of the Guiberson unseen crew.

TYPE "G"

TYPE G DRILLING HEAD

Small and efficient compact unit. Designed primarily for tubing, this head is suitable for drill pipes including 3½" flush joint. Built for working pressures up to 1500 lbs.

TYPE "H"

TYPE H DRILLING HEAD

Sturdy, light, small. Has essential elements of a rotary table. Gives tight seal with any standard Kelly from 2½" to 3½". Built for working pressures up to 1500 lbs.

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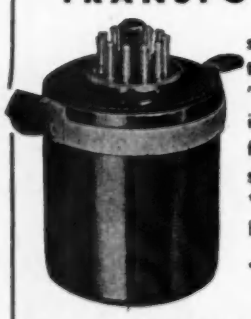

sealed against Sub tropical humidity—"Sextuplex shielding," improved uniformity, minimum size and weight, *plug-in terminal block.

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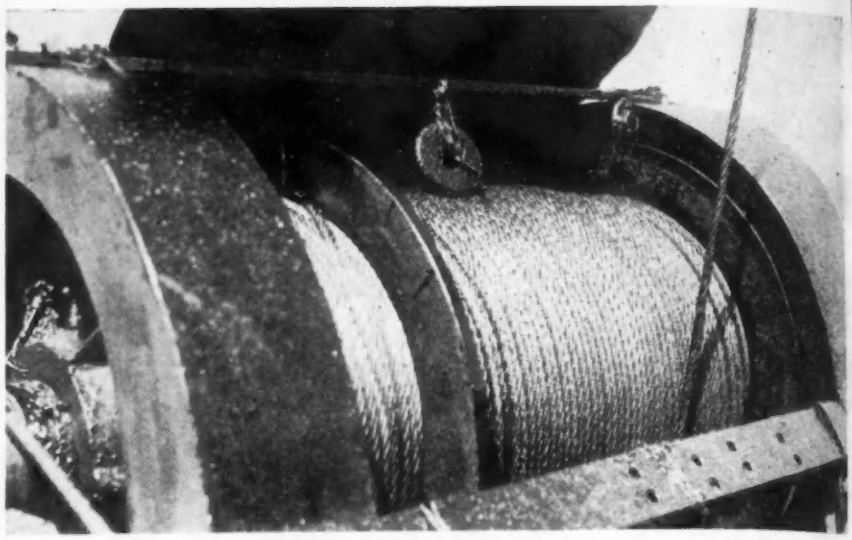
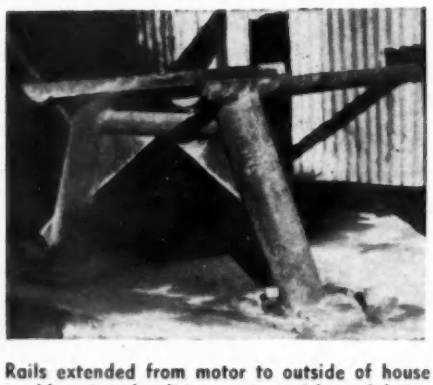


Riding on the wire line still on the reel until signalling the end of the run by swinging free, this gadget permits higher reel speeds until close to end of working cycle of operations.

ject may be suspended by twine over at one end of the spool to indicate, when the object ceases to ride on the wire and hangs free just clearing the layer, that the bottom flag will appear shortly.

Permanent Extensions Aid Motor Overhaul



Rails extended from motor to outside of house enable unit to be slid to contact with truck hoist.

POWER OVERHAUL

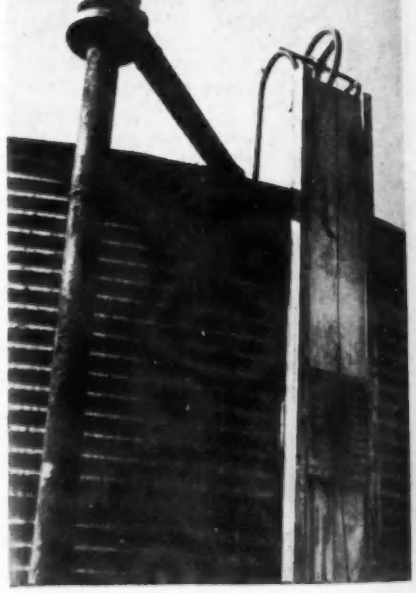
Considerable expense and shutdown time may be avoided, if, in installing the pumping unit prime-mover, a permanent track, over which the motor may be skidded when removing it for repairs, is alliowed to extend out the side of the belt hall enclosure. A length of 8-inch casing is split into thirds lengthwise and two of the sections mounted in the manner illustrated to form tracks. The inner ends are mounted close to and at the same level as the motor base, and the outer ends are welded to a sturdy support which is built up out of two short lengths of scrap casing, set in concrete.

When the motor is to be removed, all that has to be done is remove several pieces of the corrugated iron panelling from the side of the structure, then skid the unit onto the pair of rails and pull it out and onto the truck with the winch. By being able to remove the unit so easily and remove it to the shop, much time can be saved in getting the well back on production.

Graduated Gauge Block Indicates Fluid Level

TANK FARM GAUGING

Reading the tank fluid level to the nearest inch or half-inch from outside the tank greatly simplifies the routine work of one field pumper. A simple float and exterior level indicator, commonly-used accessory to field tank batteries, was modified by replacing the conventional weight or pointer with a heavy rectangular wood block on which had been scribed 12 inch-marks. With the even-foot marks clearly and accurately marked on either side of the groove through which the block travels, it is very easy to read the tank fluid level to within less than an inch.



Inch-spaced graduations on the float board indicate closely tank contents and save gauging.

Continued Gains in Distillate Stocks, Residual Fuels Are Market Highlights

Continued gains in stocks of distillate and residual fuels marked market development in the week ended September 23. There was also a gain in crude runs to stills and an increase in stocks of crude oil. Stocks of gasoline continued to decline. Weekly production of gasoline was off compared with the previous week, and crude output was also below last week's figure.

Distillate fuel stocks have been increasing consistently over a period of several weeks in an attempt to meet the demand for heating oil in the East.

The drop in crude production was only 2000 barrels daily, and crude stocks showed a gain of 1,366,000 barrels as compared with a heavy decrease for the week ending September 23. The slump in crude stocks then however, was due to transferring large quantities of oil to stocks for distillate and residual fuel.

Due to this shifting and since the emphasis has shifted from gasoline to heating oils, the production of gasoline slumped 360,000 barrels daily, resulting in further stock declines of 354,000 barrels daily. For the week, gasoline stocks stood at 78,372,000 barrels. A year ago, the total was 69,095,000 barrels, or 13.4 percent below the present accumulation.

Gasoil yield was up 30,000 barrels, and the gain in distillate was 1,503,000 barrels. Residual fuel output was below that of last week by 785,000 barrels, but a weak demand permitted continued accumulation of stocks of this product, so that at the weekend the total stood at 62,240,000 barrels, 1,505,000 barrels more than the previous eight-day period.

Percentage differences in trends as compared with a year ago are as follows: Daily crude production, up 8.5 percent; runs to stills, up 8.6 percent; crude oil stocks, off 5.9 percent; production of natural blended gasoline, up 11.5 percent; stocks of gasoline, up 11.9 percent; production of gasoil and distillate, up 4.3 percent; stocks, up 11.7 percent; residual fuel production, off 4.1 percent; stocks of residual fuel, off 6.9 percent.

July Gasoline Increases Over June, Bureau Reveals

Daily average production of natural Gasoline and allied products increased to 11,607,000 gallons daily in July from 11,462,000 gallons in June, it was reported last week by the Bureau of Mines.

Production of these products was reported by the Bureau as including 191,814,000 gallons of natural gasoline against 182,658,000 gallons in June; 77,322,000 gallons of cycle products against 75,180,000 gallons; 16,926,000 gallons of iso-butane at natural gasoline and cycle plants against 15,666,000 gallons; 73,752,000 gallons of other liquefied petroleum gases at natural gasoline and cycle plants against 70,350,000 gallons; 13,104,000 gallons of liquefied refinery gas at refineries against 10,080,000 gallons, and 8,400,000 gallons of benzol, unchanged.

Total stocks decreased at both plants and refineries, at the former dropping from 89,418,000 to 88,998,000 gallons and at the latter from 98,616,000 to 96,852,000 gallons, the Bureau announced.

☆

C. M. MACKEY has been appointed manager of the Southern District of Westinghouse Electric Supply Company, with headquarters in Dallas. He was transferred from Houston where he was branch manager for Westinghouse Electric & Manufacturing Company for several years.

M. L. HAIDER, head of production research and engineering for Standard Oil Development Company of New York and former chief engineer for The Carter Oil Company, spoke on "Petroleum Reservoir Efficiency and Well Spacing" before Mid-Continent Section, AIMME, Tulsa.

Texas Rule Amended

The Texas Railroad Commission has amended its allowable transfer rule, Rule 23, of the East Texas field rules, to eliminate that clause which provided that exceptions should be terminated automatically when federal authorities permitted.

A new order handed down last week was revised so that such transfers rely entirely on Railroad Commission regulations rather than those of PAW.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.
(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Crude Oil Prod. Week Ended	Runs to Stills Barrels Daily	Runs to Stills Week Ended	Crude Stocks Barrels	Crude Stocks Week Ended	Gasoline Stocks Barrels	Gasoline Stocks Week Ended	Gasoil and Distillate Stocks Barrels	Gasoil and Distillate Stocks Week Ended	Residual Fuel Oil Stocks Barrels	Residual Fuel Oil Stocks Week Ended
Highs:												
1941	4,337	11-22	4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	103,448	1- 4
1942	4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	49,861	11-14	95,857	1- 3
1943	4,436	11-13	4,331	12- 4	245,752	5-29	94,159	3-20	46,187	11-27	72,881	1- 2
1944	[1]4,745	9-16	[1]4,752	6-17	240,992	1- 1	89,162	4- 1	44,781	9-23	62,514	9-23
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 8
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,382	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,140	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-13	232,191	1- 9	68,182	10-16	30,732	4- 3	57,596	12-25
1944	4,357	1- 1	4,228	2-12	[4]220,623	9- 9	76,302	1- 1	30,232	4-20	49,737	3-18

TRENDS OF 1943 AND 1944

Trends in Week Ended:	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gasoil and Distillate Production Weekly	Gasoil and Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1943:									
January 2	3,871	3,734	233,938	10,957	82,426	4,285	42,913	7,683	72,881
January 30	3,826	3,698	233,863	10,339	88,830	3,888	37,057	7,452	70,763
February 27	3,873	3,709	235,217	10,566	93,157	4,230	32,939	7,839	70,140
March 27	3,896	3,742	239,126	10,231	94,079	3,541	30,980	8,018	67,936
April 24	3,913	3,737	242,035	10,583	91,001	3,954	31,142	8,168	67,455
May 29	3,970	3,679	245,752	10,656	83,937	3,798	32,274	7,672	67,682
June 26	3,955	4,015	242,657	11,092	79,589	3,876	34,044	8,126	67,960
July 31	4,133	3,788	238,420	11,127	74,977	3,765	36,363	8,478	66,877
August 28	4,196	4,227	236,170	12,429	72,525	4,351	37,928	8,732	67,250
September 25	3,344	4,156	233,013	12,206	70,024	4,608	40,328	8,560	66,650
October 30	4,383	4,176	247,219	12,813	69,297	4,642	44,591	7,968	63,833
November 27	4,414	4,261	239,761	12,638	69,980	4,379	46,187	8,633	62,143
December 25	4,363	4,185	241,310	12,597	74,024	4,457	43,791	8,689	57,596
1944:									
January 1	4,357	4,453	240,992	13,192	76,302	4,575	42,310	9,141	57,330
January 29	4,409	4,359	240,251	13,427	81,085	4,054	37,266	8,889	52,857
February 26	4,423	4,377	237,137	13,183	85,248	4,558	33,766	8,952	51,387
March 25	4,385	4,443	236,285	13,362	87,287	4,979	31,319	9,013	51,609
April 1	4,383	4,435	234,667	13,824	89,162	4,450	30,530	8,367	51,326
April 29	4,431	4,300	235,342	13,126	88,462	4,284	30,236	8,398	49,985
May 27	4,514	4,532	234,423	13,502	86,468	4,702	32,035	8,568	49,612
July 1	4,587	4,638	228,860	14,052	83,559	4,496	35,360	8,872	52,235
July 29	4,608	4,627	225,112	14,115	82,665	4,833	38,135	8,900	54,280
August 26	4,667	4,698	222,931	14,112	80,740	4,566	41,543	8,680	59,839
September 2	4,657	4,592	223,482	14,265	79,921	4,664	41,964	8,293	59,876
September 9	[1]4,689	4,584	[4]220,623	14,093	79,576	4,440	43,053	8,999	60,785
September 16	[1]4,745	4,585	221,989	14,201	78,726	4,470	43,556	8,214	62,240
Sept. 23, 1944	4,743	4,608	.....	13,841	78,372	4,471	44,781	9,180	62,514
Sept. 25, 1943	4,344	4,175	[5]233,681	12,290	69,095	4,506	39,116	8,549	66,896
Change:									
In week	—2	+23	+1,366	—360	—354	+1	+1,225	+966	+274
In year	+399	+433	—11,692	+1,551	+9,277	—35	+5,665	+632	—4,382
In year	+9.2%	+10.4%	—5.0%	+12.6%	+13.4%	0.8%	+14.5%	+7.4%	—6.6%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, September 18, 1943.

International Developments

No Quick Pacific Victory Seen As OWI Describes Jap Petroleum Supply

Japan is depending largely on refining facilities in the East Indies for her petroleum requirements, but has built up a stockpile of aviation gasoline sufficient for at least two years and possibly longer, according to estimates of military and civilian authorities in Washington.

In a comprehensive view of all phases of Japan's war preparations and machinery, the Office of War Information disclosed September 27 that our over-all military plans, including those concerned with production, are based on the assumption that it may take years, rather than months, to defeat the Nipponese. Eighteen months to two years after the defeat of Germany is considered an absolute minimum, it was said.

No Internal Collapse

No internal collapse of Japan is expected, and nothing less than total physical destruction or utter exhaustion of her men and materials will bring about her defeat, the OWI declared.

As the Japanese are forced back upon their own land, their supply lines will shorten, offsetting in part the loss of planes and ships which our forces are destroying. Our own supply lines, on the contrary, will lengthen and be more difficult to maintain.

Discussing Japan's oil position, the OWI placed her current wartime consumption of products at 55,000,000 barrels a year. Her production is placed at 3,000,000 barrels a year of natural crude in Japan and Korea, and between 15,000,000 and 22,500,000 barrels of synthetics from plants in Japan, Korea and Manchuria.

"Since this production represents only from a third to half of her annual requirements, and since the refining capacity of the inner zone is only about 12,000,000 barrels, it is obvious she must rely on refining facilities situated outside of Japan proper and Formosa, particularly those in the East Indies," the report said. "Thus she is predominantly dependent for defense on what has been stockpiled in the home islands.

"Her stockpile of aviation gasoline is estimated to be equal to two years of warfare on the present rate of operations since it totals about 75,000,000 barrels; her lubricating oils to 18 months.

"Her stockpile of fuel oil, on which her navy is dependent, is estimated to be equal only to five months of operations over the present huge areas of her empire. However, requirements of some of the petroleum produced may become a reduced quantity as the Japanese-controlled area is restricted by military action."

Stressing Synthetics

During the war years, Japan is reported to have concentrated on synthetic oil production from her enormous supplies of coal, and on the extraction of oil from shales. Plants in Japan, Korea and Manchuria are estimated to be now producing in the neighborhood of 15,000,000 barrels annually, and of this nearly 60 percent is fuel oil. Some experts believe, however, that the potential production of synthetic petroleum products may be nearly 50 percent higher than these estimates, or 22,500,000 barrels a year.

The rate of 60 percent would place fuel oil production at an annual total of 9,000,000 to 13,500,000 barrels, plus 1,800,000 from natural crudes, the OWI pointed out. Taken with her stockpile of more than 14,000,000 barrels, this should provide for no more than a year's operation of the navy on the somewhat restricted basis caused by increasingly narrow areas of control. Present naval consumption is placed at about 35,000,000 barrels of fuel oil a year.

England's Oil Production 50,000 Barrels Monthly

England's recently-announced oil field is producing about 50,000 barrels monthly, oil men estimated after the British Control Board announced September 23 that commercial production there had been established since outbreak of the war.

The government statement credited the Anglo-Iranian Oil Company and its subsidiary, the D'Arcy Exploration Company as being responsible for the discovery as a result of detailed seismograph surveys that have been in progress throughout the war period. More than 1600 shot holes were put down.

While location of the field has been kept secret, American oil men believe the discovery was made in Sussex or Kent, between London and the English Channel. Oil traces have been encountered at shallow depths in wells drilled in that area, and the geological section is regarded as favorable for accumulations of the stratigraphic type, as well as within structural closure. It comprises a thick series of Mesozoic strata between surface Cretaceous beds and deep-buried upper Paleozoic rocks. Dark shales, oolitic limestones and porous sandstones make up much of the section. Some of the wells recently drilled are 7000 feet deep, indicating that explorations probably were not carried on in central or northern England, where older Paleozoic rocks outcrop over wide areas and are strongly folded and faulted.

Eight Producers in Venezuela Completed

Creole Petroleum Corporation completed eight producers in four Venezuelan fields in August. Three are in the Lagunillas field, Lake Maracaibo, and one in the Tia Juana field farther out in the lake and northwest.

Three others were completed in the Jusepin field and one in the Mulata field, Monagas, eastern Venezuela. In the middle of August the company had 22 additional operations in progress in Venezuela, in the following fields: Tia Juana 4, Lagunillas 3, Punta Benitez 1, Mulata 5, Jusepin 6, and San Joaquin 3.

Texas Petroleum Company (Venezuela) is approaching critical depth in its wildcat well in Delta Amacuro, 20 kilometers north of the town of Tucupita. The well, which was spudded at the end of May, was at 6553 feet September 15. This is the firm's only wildcat now drilling in Venezuela. The location is more than 40 kilometers from nearest production, east and slightly north of the Caritos field.

Program for Drilling Contractors Announced

Manpower, equipment and transportation problems will receive special attention from the American Association of Oilwell Drilling Contractors in the Blackstone Hotel, Fort Worth, October 3-4.

Committee meetings will be held during the morning of the first day, and election of officers and committee reports are scheduled for the afternoon. Lieutenant Governor John Lee Smith will speak at the annual banquet.

Papers to be presented during the morning session, October 4, include: "Drilling Equipment," John Chapman, Houston; "Drilling Practices Under Present Conditions," B. J. Dowd, Shreveport; "Sound Accounting Practices," Wallace W. March, Dallas; "Results of Continuity of Operations," Warren S. Churchill, Tulsa; "Safety Practices," R. C. Sharp, petroleum engineer, Los Angeles.

Papers at the afternoon session include: "Drilling Requirements Before and After V-Day," E. DeGolyer, Dallas; "The Equipment Situation," Claude Parsons, director of materials, PAW, Washington; "Transportation Equipment Prospects," author to be announced; "The Manpower Outlook," W. D. Gallier, field supervisor, WMC, Dallas; "Remarks," Glenn A. Campbell, chief of materials section, PAW, Washington, and "The Butane Outlook," James E. Pew, director of gas and gasoline, PAW, Washington.

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WILLIAM M. SCHAILL, 64, Mountain Lakes, New Jersey, one of the original investigators of the Barco Concession, Colombia, died September 15 in New York. For the last 18 years he had been associated with Gulf Oil Corporation in New York, Colombia and Venezuela.

JOSEPH NAOUM TOONI, former superintendent of petroleum for the Iraq government, has joined the research laboratory of the Skelly Oil Company at Pawhuska, Oklahoma. Tooni attended Hope College in Michigan and Oklahoma A. & M. College.

JACK MORRIS is returning to his duties with the drilling department of Caribbean Petroleum Company at Maracaibo after vacationing in the United States since May.

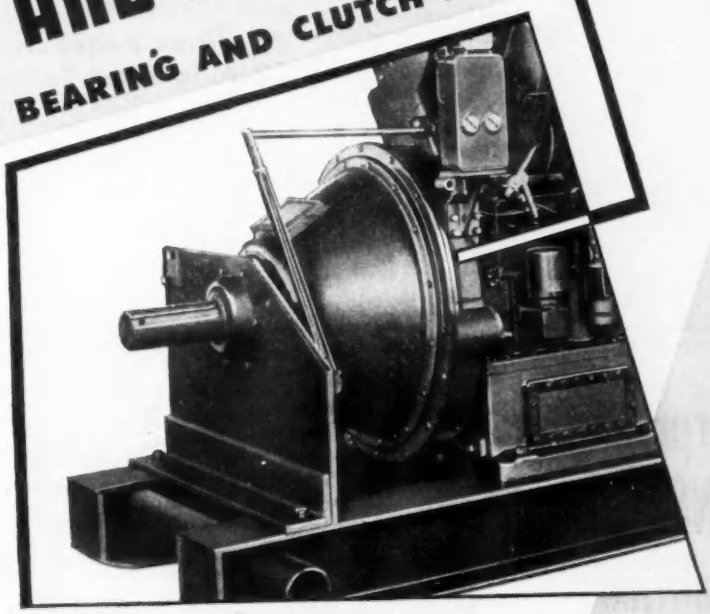
JOHN BEMROSE, formerly with Royal Dutch Shell in the Netherlands East Indies until the Japanese occupation, and later in the Australian air force, has left Houston for Venezuela to join the Caribbean Petroleum Company as a geophysicist.

climax

FACTS ABOUT YOUR CLIMAX ENGINE

POWER TAKE-OFF AND SUPPORT

ABSORB SHOCKS • • PROLONG BEARING AND CLUTCH LIFE



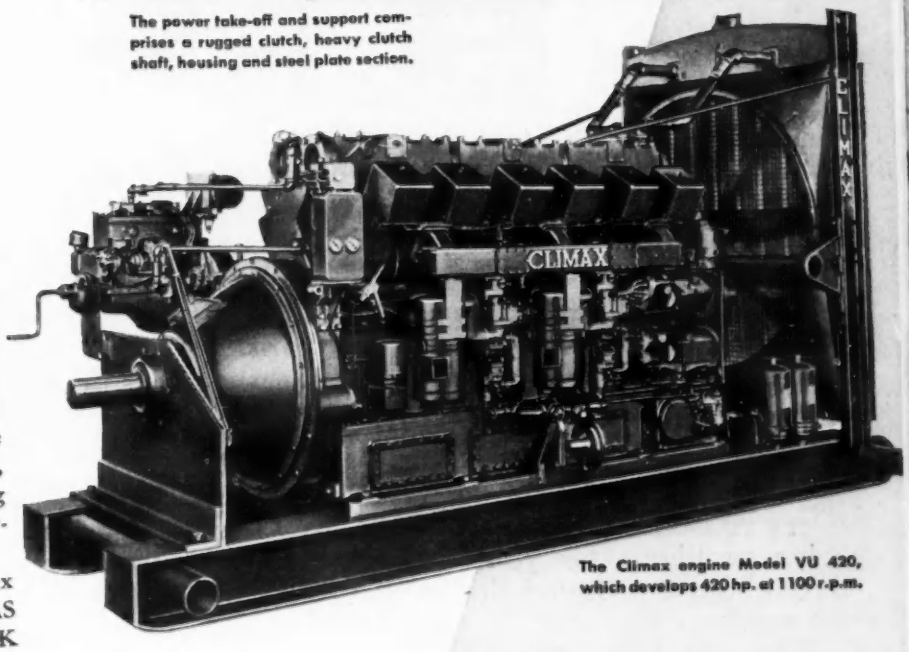
The power take-off and support comprises a rugged clutch, heavy clutch shaft, housing and steel plate section.

By cushioning the impact of shock loads, and maintaining perfect alignment between engine and drive assembly, the Climax Power Take-off and Support insures a straight line pull and full power delivery.

The power take-off consists of a smoothly operating, heavily constructed clutch, mounted on a massive clutch shaft in the power take-off housing. Clutch plates are exceptionally heavy to prevent distortion, and precision-built to insure uniform pressure at all times. Rigid support for the power take-off is provided by a steel plate section fastened to the take-off housing and engine frame. This sturdy support keeps engine and drive members in perfect alignment. Damage and rapid wear on bearings and clutch, due to belt side-pull and shock loads, are prevented.

On the Climax VU 420, a clutch power take-off may be furnished for direct drive through a flexible coupling. For belt drives, a clutch power take-off, flexible coupling and pulley shaft, mounted on two bearings, are used.

Other standard equipment on Climax Drilling Engines includes: QUICK GAS ENGINE STARTING • BLUE STREAK COMBUSTION • DUAL IGNITION • DUAL CARBURETION • DUAL MAGNETOS • TRIPLE FUEL EQUIPMENT.



The Climax engine Model VU 420, which develops 420 hp. at 1100 r.p.m.

TAKE CARE OF YOUR PRESENT CLIMAX ENGINES

1. Keep engine lubricants clean, and maintain oil at proper level as directed in the operating instructions.

2. Keep cooling system free of scale, to prevent warpage of cylinder blocks and damage to heads. Clean and flush cooling system with scale remover every three months.

3. Maintain tappet clearances at those shown on engine nameplate. Check with thickness gauge.

4. Keep fuel clean.

5. Keep outside surface of engine clean and dry to prevent ignition harness failures.

"For High Achievement in the Production of War Material".

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REGIONAL OFFICES: **Chicago, Ill.; Dallas, Texas**

AFFILIATED COMPANIES: McAleer Mfg. Co., Chicago; Henlon-Waters Co., Tulsa

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General Offices: **Dallas, Texas**

Distributed in the California Oil Field by **Climax Engines & Parts Co.**
1406 S. Grand Avenue, **Los Angeles, California**

Pipe Line Review

West Texas Properties Bought to Support Line

Stanolind Oil & Gas Company has contracted to purchase the producing properties of the Permian Oil Corporation in the Slaughter field, West Texas, involving 58 flowing wells on 3 leases aggregating 3189 acres, with base allowable of 3100 barrels daily.

The consideration was reported as about $4,000,000. The purchasing company has acquired numerous properties and undeveloped leases within and near the Slaughter field this year to support the Stanolind Pipe Line Company's 16-inch trunk line outlet, which is currently relying on other pipe lines for a large percent of its crude receipts.

Priorities Requested for 22-Mile West Texas Line

The C. & S. Pipe Line Company, headed by H. W. Snowden, Dallas, is seeking priorities for the construction of a 22-mile, 3-inch line from the Funk 7-well shallow field, Tom Green County Sector of West Texas, to Humble Pipe Line Company's system near San Angelo.

Surprising JENSEN Unit Qualities

Producers using a JENSEN Unit for the first time are likely to be surprised at how little power is required, at how materially it cuts costs, at how much more satisfactorily the well seems to function.

There is nothing remarkable in the appearance of a JENSEN Unit. The difference is in the way it performs.

We build in 25 years of "know how". We concentrate on making wells more profitable and satisfactory. Every suggestion made by a customer is thoroughly investigated and considered. Our engineers are never satisfied.

We think you'd like the JENSEN Unit. We have every reason to believe it would save money and solve problems for you, as it has for producers throughout the United States and in far corners of the world.

Why not talk with JENSEN owners and your JENSEN dealer? See our pages in the Composite Catalog. Write for Bulletin No. 27.

JENSEN BROTHERS MANUFACTURING CO.

. . . Coffeyville, Kansas, U. S. A.

EXPORT OFFICE: 50 CHURCH STREET, NEW YORK CITY

Big Inch Pipe Line Rate to Be Maintained

Operations over the Big-Inch pipe line will be maintained at a rate of 318,000 barrels of crude daily during the final three months of 1944, under schedules issued last week by PAW.

Schedule calls for movement daily of 126,500 barrels of oil from East Texas, 68,000 barrels from Southwest Texas and 123,500 barrels from West Texas.

15-Mile, 8-Inch Line in East Texas Is Planned

Tyler Lone Star Gas Company will provide a market outlet for gas produced in the Navarro Crossing field, centering upon the Houston-Leon County line, East Texas district, by constructing a 15-mile, 8-inch transmission line southwest from the field to its system.

About 14 miles of 4- and 6-inch gathering lines will be required to connect the field's 22 gas and oil wells. Pipe for this project will not be available until November.

Two Texas Fields Combined Under Common Rulings

The Fuhrman and Mascho fields in Andrews County have been combined under new orders of the Texas Railroad Commission, and common rules promulgated for both.

The regulations call for spacing 440 feet from lease lines and 1320 feet between wells. Proration is based on 40-acre units, and the allowable distributed 75 percent on acreage and 25 percent per well. A maximum gas-oil ratio of 3500/1 is provided. Heretofore Mascho field had 40-acre spacing, while 10-acre spacing prevailed in the Fuhrman field.

Texas Venezuela Wildcat Drilling at 6595 Feet

Texas 2, Delta Amacuro wildcat being drilled by Texas Petroleum Company of Venezuela, was drilling below 6595 feet on September 26. It is 40 kilometers from nearest production in extreme eastern Venezuela, where a number of companies are attempting to obtain concessions. The company was coring at 7415 feet in its Rincon Largo 3.

Sociadad Anonima Petrolera Las Mercedes was reported to be coring in shale in its Mercedes 8, at 4025 feet. Its Manapire 2 was overhauling engines.

China Reserves Estimated At 1,843,000,000 Barrels

Dr. Chung Yu Wang, technical expert, Chinese ministry of economic affairs, told the New York Section of the AIME September 19 that China's only well-developed oil field, at Lanchow, Kansu Province, has proven reserves of 1,843,000,000 barrels.

Development of the field has been all but halted due to lack of equipment and transport facilities, he declared. American authorities believe the Lanchow field is currently producing about 3000 barrels daily, but that its potential is much larger.

☆

ELMER T. CAMPBELL, formerly assistant manager of The B. F. Goodrich Rubber Company, petroleum sales department, has been named manager of the company's government sales office in Washington, D. C.

U. S. Field Operations

Oklahoma

West-Central Limits of West Edmond Pool Defined

With Leonard 1-C, C NE NW 25-14n-5w, Canadian County, a failure, Sohio Petroleum Company apparently defines the west-central limits of the West Edmond pool. Test was drilled to 7210 feet and electrolog showed no oil or water. The well is ½ mile north of Ace Gutowsky's dry hole in Section 36. The well had the Bois D'Arc zone at 7149 feet but it was hard and dry. Also in Canadian County, Sohio was preparing to test Funk 1, C SE SE 24-14n-5w, after logging Hunton at 6992 feet. Northeast of the failure Sohio completed Edmond 2, C SE SE 6-14n-4w, flowing 100 barrels of oil in 2 hours through 1-inch choke. Continental Oil Company's Casey 2, C NW SE 21-14n-4w, east side of the pool, flowed 175 barrels of oil in 10 hours without benefit of acid. In the south sector Magnolia Petroleum Company finaled Motter Heirs 2, C SW SW 16-13n-4w. Perforated with 250 shots at 6880-6964 feet, the well flowed 140 barrels an hour through ½-inch choke. Four other tests are in the pay and due for completion.

McClain County: The Carter Oil Company's Noble pool discovery, Johnson 1, C SW SE 30-8n-2w, was preparing to re-test after squeezing off perforations from 6208-13 feet in the Wilcox. Opening another Anadarko Basin field, the Johnson first flowed about 100 barrels in the first hour but later developed water when tested through various chokes. Half a mile north of the discovery Carter staked M. T. Johnson 1, C SW NE 30-8n-2w. Magnolia and Mid-Continent Petroleum Company have close-in acreage.

Lincoln County: E. S. Adkins reported a slight oil show in the Prue zone in Nonamaker 1, SW SW NE 9-15n-6e. Stains were reported in cores from 3064-83 and 3083-87 feet. The wildcat is along the Skellyville trend area and is being drilled on sub-surface data. It was drilling below 3450 feet.

Noble County: Southwest of the Southeast Perry pool Summitt Drilling Company et al staked Bartow 1, SE SE SW 10-20n-1w, and is drilling below surface pipe set at 108 feet. The wildcat is on a 2100-acre block assembled by W. G. Mauser. Gardner Petroleum Company has an interest in the operation. J. A. Brouk assembled a block south of Tonkawa in Sections 19-, 20-, 21-, 30- and 31-24n-1w. The block was based on sub-surface and seismograph surveys.

Garvin County: A water shut-off was being attempted at Sinclair Prairie Oil Company's Wright 1, SE NE 20-3n-3e, north offset to Alred 1 which opened a new area east of East Pauls Valley pool. Perforated at 2049-51 feet in McLish sand, the well recovered 1600 feet of fresh water. On previous drill-stem test at 2018 feet the well made 240 feet of oil and 340 feet of fresh water. Total depth is 2191 feet with pipe set at 2105 feet. West of East Pauls Valley, E. J. Kubat abandoned Dixon 1, NE SW SE 9-3n-1e. McLish lime was topped at 3580 feet; plugged back to 3510, it showed some oil and 900 feet of water plus an estimated million feet of gas. Six miles south of Byars pool, Skelly Oil Company et al recovered 210 feet of 26-gravity oil in Rakestraw 1, SE SW SE 4-4n-3e, from 2070-2140 feet with tool opened 24 minutes. Viola was topped at 2990 feet and test was drilling ahead below 3100 feet.

Hughes County: Three miles north of the Hill Top gas pool, Northern Ordnance, Inc.'s Empire 1, SW SW NE 4-5n-11e, a wildcat, tested 10,000,000 feet of gas and a 2-inch stream of salt water between 5407-5411 feet in the Cromwell. Operator has recemented pipe and is preparing to re-test.

Pawnee County: In the Ralston area, Continental Oil Company's Meyerdirk 1, SW NE NW 19-22n-5e, was drilling below 3460 feet; Deep Rock Oil Company's Dawes 1, wildcat in SW NW SE 32-22n-7e, Blackburn area, was drilling in hard lime at 2756 feet.

Pottawatomie County: Cities Service Oil Company's Harbour 1, wildcat west of Tecumseh in the NEc NW 13-9n-2e, which failed in the Simpson dolomite, was preparing to re-test after shutting off water by squeezing perforations at 4942-47 feet.

West Moore: Mid-Continent was feeling for a soft spot in the second Wilcox in Mullins 2, NE NW SW 29-10n-3w, Cleveland County, for a production test. The pay zone was topped at 8802 feet and at 8838 feet it was still hard and tight. J. E. Crosbie, Inc.'s Stotts 1, NE SE SE 30-10n-3w, offsetting the Mullins 2 to the west, was drilling below 7040 feet about 1800 feet above pay.

Riverbeds Are Property Of State, Judge Rules

A court decision which may have far-reaching effects on oil and gas royalties in Oklahoma was handed down by Federal Judge Royce Savage at Tulsa when he ruled that the riverbed in all streams within the state belong to the state except in such cases where the federal government had ruled to the contrary before statehood.

The decision grew out of a suit brought by the federal government on behalf of Otoe and Pawnee Indians against Champlin Refining Company contesting the right of the latter to drill a well in the bed of the Arkansas River in 23-23n-3e, east of the East Watchorn pool of Pawnee County.

Champlin Refining Company obtained a lease to the riverbed from the State School Land Commission and drilled its well under permit granted by PAW, which recognized the state's control of the riverbed.

Wells Completed in United States in Week Ended September 30, 1944

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells: *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS: *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama												4	29	2
Arizona													6	4
Arkansas	4			1	5				2	2	7	3	172	190
California	40	4			44		1		1	2	46	39	1,543	1,054
Colorado									1	1	1	1	21	21
Florida													1	1
Georgia												1	6	2
Illinois	30		1	12	43	12	2		8	10	65	34	1,448	1,306
Indiana	4	1		1	6	1	1		2	3	10	4	236	199
Iowa													2	3
Kansas	10	3			13		1	2	5	8	21	20	1,295	1,239
Kentucky	9			4	13	1	2		1	3	17	16	574	270
Louisiana													572	466
North Louisiana	3	3		1	7			1	2	3	10	7	194	212
South Louisiana	3	1		4	8		1			1	9	10	378	254
Michigan	17	1		1	19		1		1	2	21	14	494	430
Mississippi	8				8				1	1	9	5	147	69
Missouri									1	1	1	3	35	21
Montana												9	255	164
Nebraska													7	35
New Mexico									1	1	1	6	296	196
New York	15		10		25						25	27	936	906
Ohio	1	2		3	6						6	21	682	631
Oklahoma	24	1	1		26				11	11	37	40	1,385	1,027
Pennsylvania	28	9	15	1	53						53	59	2,217	1,883
Tennessee													9	6
Texas													4,536	3,059
E.Tex.Bor. Co.'s									1	1	1		25	16
E. Texas Field													3	5
Rest of E. Texas	2				2				3	3	5	5	216	171
North Texas	15	1		10	26	1	1		12	13	40	24	1,059	737
W. Central Tex.	4			2	6				2	2	8	8	308	280
West Texas	22			1	23		1		2	3	26	35	1,186	676
Tex. Panhandle	8			3	11						11	10	173	148
G. Coast, Upper	9			2	11				6	6	17	17	434	240
G. Coast, Lower	1	1		1	3	1			3	3	7	31	715	469
Southwest Texas	4	1		2	7		1		4	5	12	4	338	272
S. Central Tex									1	1	1	2	79	45
Utah												1	1	
West Virginia		16		2	18						18	30	694	476
Wyoming												6	129	95
Total U. S.	261	44	27	51	383	16	12	3	71	86	485	496	17,728	13,755

* Includes distillate wells. † Includes salt water disposal wells.

Kansas

Pay Zone Is Discovered; Opening of Pool Possible

A possible new pool and discovery of a new pay zone in the Barrett pool, Barton County, featured Kansas oil activities as the state reported 364 operations and 90 wildcats against 294 operations and 69 wildcats for the same period last year.

Barton County: Continental Oil Company opened a producing horizon in the quartzite zone, Barrett pool, as Susank 1, SE SE SW 32-16s-13w, was completed with a physical potential of 173 barrels of oil and 2 percent water per day. Quartzite was topped at 3349 feet and the well was drilled to 3382 feet and filled up with 2700 feet of oil on initial test. The Arbuckle, which is the regular pay zone for Barrett, was missing in the Susank test. A possible new pool for the county loomed as C. E. Ashe's Donovan 1-A, NW NW SE 36-17s-13w, was preparing to test an oil show in Arbuckle at 3355-62 feet, total depth. The wildcat is 3½ miles southeast of the Hoisington pool.

Ellis County: Sunray Oil Company's new discovery, Orth 1, NE NE SW 2-14s-20w, 6 miles northwest of Kraus, was given a daily potential of 563 feet of oil daily from Reagan sand topped at 3846 feet. With casing landed at 3835 feet the wildcat was drilled to 3852 feet, total depth, and filled up with 3000 feet of oil on initial test.

McPherson County: Drill-stem test at Bay Petroleum Company's Decker 1, SEc 11-20s-3w, wildcat a mile southeast of the Johnson pool, recovered gas and 210 feet of oil-cut mud from 3019-58 feet with the tool open 20 minutes. Show is in Mississippi lime and the test was drilling below 3103 feet.

Sedgwick County: Branine & Sandy Holl's Sautter 1, SEc NE 22-29s-2w, pool opener for the new Clearwater area, was given a potential of 205 barrels of oil and 55 barrels of water daily from Lansing lime topped at 2912 feet. Pipe was set at 3025 feet and the well cleaned out to 3036 feet, total depth.

Douglas County: J. M. Huber Corporation's Community 1, NW NW NW 33-12s-20e, 18 miles south of the McLouth pool, reported good gas shows in the Squirrel sand topped at 670 feet and an oil show in the lower section of the sand at 713-16 feet. Mississippian was topped at 1069 feet and a slight oil logged in the Devonian at 1557-65 feet, total depth.

New Mexico

Discovery Indicated in State's Deepest Test

Humble Oil & Refining Company's Leonard-Federal 1, SW SW 12-26s-37e, southeastern Lea County wildcat and deepest test in New Mexico, has recovered sufficient oil and gas on drill-stem tests to indicate a discovery in the Ellenburger, at 11,815 feet with elevation of 3012 feet. Oil porosity and saturation was logged in drilling to 11,840 feet. Pay was listed in deepening to 11,870 feet, and drill-stem test at 11,800-11,870 feet resulted in head of oil and gas-cut mud and water cushion. The oil proved to be high gravity and green in color. The prospect was coring at 11,876 feet to establish the base of the pay before running pipe to try for completion.

Humble's record depth test is 6 miles south of Ellenburger failure that halted in granite at 9592 feet, and is 8¾ miles north of the Kermit-Ellenburger pool discovery in Winkler County, Texas. The former is on a structurally low geological feature, having entered the Silurian, which showed production possibilities at 9775 feet, and the Montoya at 10,264 feet.

Continental Oil Company et al's Skaggs 2-B'-23, projected Ellenburger test between the Monument and Skaggs fields, was drilling dry lime. Regardless of the outcome of this test in deepening owners are due to set pipe and try for completion in the 7695-7825-foot zone that showed considerable oil and gas with sulphur water near bottom.

West Texas

Andrews Test Believed Producing from Devonian

Stanolind Oil & Gas Company's University 1-D, Andrews County Ellenburger project and 3½ miles west of the West Andrews field, added another prospective producing horizon from lime that is tentatively identified as the Devonian, and was drilling cherty-lime 8276 feet to fulfill depth contract before setting pipe for completion. The new pay was indicated when drill-stem test at 8144-8251 feet showed strong gas flow to surface within 21 minutes. The well began unloading while breaking down drill pipe, and the recovered fluid included 90 feet of free oil, testing 40 gravity.

Chaplin Refining Company's University 1-B, 1¼ miles northwest of the above Andrews County prospect, was drilling cherty-lime at 8510 feet, having failed to indicate production in the 8200-foot zone, although promising pay zones were passed up near the 7100-7200-foot level.

Fullerton Field: British-American Oil Producing Company's McCrea 1, a mile southwest of nearest production, flowed 50 barrels of oil hourly on 10-hour test after using 10,000 gallons of acid in broken pay at 6865-7043 feet. This outpost is about 50 feet low to nearest producers.

Pecos County: Phillips Petroleum Company's Ada Price 1, which set an all-time depth record in drilling to water in Ellenburger at 15,279 feet, then partly junked the lower section of the hole, will set whipstock to drill out pipe and test possible gas pay near the 11,500-foot level. This wildcat was plugged back to 10,480 feet, then drilled back into the old hole near the 10,550-foot zone.

Winkler County: Stanolind Oil & Gas Company and Shell Oil Company's Wheeler 1-C, ¾ mile northwest of Wheeler-Ellenburger field, entered the Silurian at 9040 feet, 61 feet high to nearest producer, which is lowest of 5 wells, and logged first oil show at 9180 feet. Drill-stem test at 9170-9346 feet returned 2430 feet of oil- and gas-cut rotary mud and water cushion to indicate possible production from the Silurian, and was drilling cherty-lime at 9370 feet. Superior Oil Company's Wheeler 1, north offset to the discovery, was shut in for storage after flowing 13 barrels fluid hourly, estimated 21 percent basic sediment and water through small chokes after acidizing Ellenburger perforations at 10,666-10,686 feet, having plugged back from water at 10,800 feet. Sun Oil Company's Wheeler 1, southwest outpost, was drilling 8039 feet and checking favorably. The Texas Company's Hogg 1, 1¼ miles northwest of the North Monahans pool discovery, logged soft lime at 5155 feet, and will make drill-stem test.

Failures: Stanolind Oil & Gas Company's Midland Farms 1-J, 3½ miles east of its Midland Farms 2-well pool, Andrews County, filled with water after nitro shot at 4775-4820 feet, having plugged back from 4876 feet. In Crockett County, Phillips Petroleum Company's Schneeman 1, 3½ miles east of south end of World-Powell field, found water in Ellenburger at 9845-9916 feet. Magnolia Petroleum Company's Flood-State 1, Crane County wildcat and 1½ miles northwest of the McKee pool, flowed sulphur water from Ellenburger at 6090-6181 feet.

Wildcats: Magnolia Petroleum Company's American Republics 1, Upton County, logged water zone at 5788 feet, and was drilling lime at 5800 feet, while its Johnston 1, Lubbock County, was drilling dry lime at 4760 feet, having entered San Andres at 2890 feet with elevation of 3166 feet. Humble Oil & Refining Company's Jackson 1, southeastern Lamb County, was setting standard rig after plugging back from granite at 7191 feet to 6815 feet. Numerous oil shows logged in Lower Permian by this prospect caused a general lease play along east-west trend and on top of the deep-seated granite mountain range that cuts across the Permian Basin. Woodley Petroleum Company's Bird 1, 7½ miles northwest of the latter wildcat, entered the San Angelo at 4510 feet with elevation of 3555 feet, and was drilling dry lime at 5180 feet. In Ector County, Shell Oil Company and Cities Service Oil Company's T. P. Land Trust 1, which passed up production in Lower Permian and Devonian to explore the Ellenburger, was drilling shale at 8490 feet.

Gaines County: Amerada Petroleum Corporation's Jones 1, 3¼ miles southwest of Clear Fork production in Wasson field, was drilling hard lime at 7476 feet without shows. Humble Oil & Refining Company's Doss 1, 3½ miles northwest of the Robertson 5910-50-foot pool, recovered 450 feet of oil- and gas-cut mud on drill-stem test of Clear Fork at 7016-7250 feet after plugging back from 9049 feet. Seven-inch casing was then cemented at 7235 feet to try for completion.

Emma Field: Stanolind Oil & Gas Company's University 1-F, ½ mile north of San Andres production, drilled to water at 5619 feet, then swabbed a trace of oil with sulphur water after plugging back to 5366 feet. The next test will be opposite the main Holt pay at 5300-38 feet. The Texas Company's University-Magnolia 1-L, 1⅛ miles east of the field, was perforating opposite maximum oil saturation in Holt at 5325-50 feet after plugging back from 5520 feet. This outpost swabbed 60 barrels of fluid, averaging 10 percent oil, on 12-hour test at 5520 feet with tubing packer at 5490 feet. The area is due to gain its second and deeper pay from this development.

North Texas

Cooke Test Tops Earlier Production Performance

Kadane-Griffith Oil Company's Hopkins 1, Section 18, BBB&C Ry. Survey and 1¼ miles south by west of the Dangle Pool, Cooke County, surpassed earlier production performance in flowing 66 barrels of oil on 1-hour test through open tubing, then increased to 82 barrels per hour when shut in for official test. Production is from conglomerate at 2969-83 feet, while the Dangle area produces from Ellenburger, varying from 2200 to 2500 feet in depth.

Wichita County: The Texas Company's First National Company (Kemp-Allen) 27, 3 miles northwest of nearest Ellenburger production in the K-M-A field, failed in initial attempt to acidize Ellenburger broken pay at 4094-4125 feet due to acid solution escaping into unusually porous zone in top of the zone. This deepened Strawn producer tested free oil from Ellenburger when bottomed at 4105 feet, and is expected to open a new deep pay area for the field.

Cooke County: The Texas Company's Rasure 1, Sivels Bend prospect, showed 5 percent oil along with salt water on swabbing test of Strawn perforations at 6760-70 feet, having plugged back from Strawn at 7518 feet. Appearance of water is attributed to ineffective cement job, and the zone has been squeezed to reperforate. The Texas Company's Lynch 1, Block 6, J. W. Blankenship Survey and 3 miles southwest of the Big Indian 1-well pool, was showing small volume of oil with rotary fluid after swabbing down to 1500 feet following perforations at 4665-76 and 4681-86 feet.

Phillips Petroleum Company's Bailey Inglish-Eppie 1, J. F. Davidson Survey A-336, confirmed a new pool for Cooke County in flowing 6 barrels oil hourly from conglomerate at 2423-45 feet. This wildcat is 3 miles west by south of 1300-foot production, and was carried to schist at 2510 feet after favorable drill-stem test in above zone more than a month ago.

Montague County: Continental Oil Company's McNutt 1, NE SE SE Section 38, Burnett-McNutt Survey, 2½ miles southwest of Bowie, cemented 7-inch casing at 7200 feet to try for production at 2 levels after testing water in Ellenburger at 7223-99 feet. This wildcat recovered 300 feet of oil and 30 feet of salt water on drill-stem test at 6744-55 feet, and Simpson sand at 7003-13 feet yielded 100 feet of oil and no water.

Oil Supervisor Named

C. W. Strance became Chief Supervisor of Oil and Gas for the Texas Railroad Commission September 27, succeeding James D. Baskin, who was discharged September 25. No explanation was given for the change.

He has had considerable experience in building gas pipe lines, scouting, and in paleontological work. He was with the Lone Star Gas Company for 23 years in the production department. Three years ago Strance was made a deputy supervisor of oil and gas.

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East Texas

Lone Star Pool's First Deep Test Shows Gas

W. H. Foster and Phillips Petroleum Company's Bowling Pure 1, first deep test for the Lone Star pool, Cherokee County, was showing a small volume of gas while swabbing down to 3800 feet in unloading rotary mud to test for production opposite Rodessa perforations at 7376-88 feet. This showing offers encouragement for production when additional perforations are made at higher level in the Rodessa, as electrical formation survey logged first porosity and possible pay at 7236-46 feet and broken porosity at 7298-7392 feet. The Pettit was eliminated as a source of production when perforations at 8002-14 feet yielded small volume of salt water with trace of gas.

Rusk County: H. C. Owens et al's Rousseau 1, Robert Gilkerson Survey and 4½ miles northeast of Minden, was awaiting orders in Petit shale at 7150 feet with some evidence of gas and distillate in oolitic lime cores below 7130 feet. It is scheduled to continue to the Travis Peak.

Smith County: Skelly Oil Company's Chisum 3, fourth deep test for the sand flat 2-pay area, failed to produce when tester was used in Rodessa at 9390-9451 feet, and has been plugged back to 7240 feet to complete in Paluxy sand at 7050-60 feet.

Panola County: Skelly Oil Company's Houston Wills 1, M. A. Romero Survey, 10-mile west extension of the Carthage gas field, which showed for a gas distillate producer from the upper Pettit perforated from 6160-95 feet, is testing lower Pettit a third time, after recovering 4700 feet of salt water at 6354-75 feet. Depth is 7006 feet, with 5½-inch casing set at 6853 feet. Skelly is reported moving in for Powers 1 in the H. J. Kame Survey, 2 miles northeast of Wills 1.

With gas-distillate production already assured, Southern Production Company is ready for official tests of dual completion of Soape 1, in the J. N. Williams Survey, 4 miles southwest of Carthage. Perforations in the 5905-30 foot zone will be shut off with packer. Other perforations were made in Lower Pettit at 6050-6116 feet and 6140-60 feet. Total depth is 6503 feet, with ground elevation of 341 feet.

Two locations for the Carthage area were staked. Feazel & Kinsey are moving in materials at C. J. Williams and G. T. Allison 1, 750 feet from west line, 1350 feet from south line of James Hughes Survey, a deep test 3 miles northwest of Carthage. Arkansas-Louisiana Gas Company will drill Z. L. Daniel 1, Matthew Parker Survey, 9 miles southwest of Carthage, to test Travis Peak.

Harrison County: Rogers Lacy's Verhalen Nursery 1, wildcat on a 147-acre tract in the Aaron Poe Survey, Scottsville area, is drilling below 6100 feet with no reported oil shows. Seven feet of porous lime with gas odor was recovered in a core from 5577-97 feet.

Shelby County: R. L. Holcomb's Pickering Lumber Company 1, wildcat in the J. W. Crane Survey, 3 miles northeast of Shelbyville, has recovered cores with shows of oil and gas. Plug was set at 2573 feet and the well swabbed water and some oil. It is now awaiting pump to test at depth of 2596 feet.

Hopkins County: Humble Oil & Refining Company's Nichols 1, prospective oil strike for the Pickton area 4 miles northeast of the Coke field, failed to encounter additional pay in drilling to water in Travis Peak at 8567 feet. This wildcat indicated production in top of Rodessa at 7869-95 feet, and will set pipe to try for completion. Sun Oil Company's Turner 1, 8000 feet northeast and on same structure, was drilling 2600 feet in Pecan Chalk, topped at 2532 feet, or 4 feet high.

Wood County: Gulf Oil Corporation's Hornbuckle 1, 2500 feet north by west of its Winnsboro 7990-8014-foot Bacon lime discovery, confirmed deeper oil zone from the Young, or Basal Rodessa, in flowing 118 barrels of 46.9-gravity oil natural, with gas-oil ratio of 1204/1, through 3/16-inch choke from perforations at 8210-40 feet. Perforations at 8610-31 feet in Pettit had previously yielded show of oil. The discovery flowed oil from perforations at 8253-88 feet, but this lower zone was sealed off when company abandoned plans to dual complete. Amerada Petroleum Corporation's Gamblin 1, 1400 feet north by east of the Winnsboro discovery, proved dry in Paluxy, topped at 6415 feet with elevation of 466 feet, and was drilling lime at 6842 feet.

Sinclair Prairie Oil Company's Collins 1, Wood County 12,000-foot wildcat project northwest of Hawkins field, entered Georgetown at 6096 feet, and was drilling lime at 6105 feet. Sohio Petroleum Company's Little Sandy Club 1, near south line of Wood County, was

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coring 7120 feet for Paluxy sand due at this level.

Van Zandt County: Northern Ordnance, Inc.'s Shelton 1, 1½ miles southeast of Martin Mills, is nearing a decisive stage in drilling Travis Peak white sand at 9110 feet. Humble's Bruce 1, 4 miles south of Edgewood, was drilling shale and sandy-lime at 7950 feet.

Houston County: J. S. Ivy and W. T. Moran's Murray 2, John Dust Survey, 8 miles northwest of Weldon, recovered salt water with nominal show of oil and gas when tester was used at 7996-8001 feet in unidentified formation. This wildcat is contracted to 10,000 feet. In the Navarro Crossing field, Sun Oil Company's Dailey 2, Nathan Wade Survey, excluded Woodbine gas in setting pipe at 5855 feet, and was coring at 5860 feet to try for oil production. A market is pending for the shutin gassers in this field, which was discovered in 1938.

Southwest Texas

Lavaca Well Produces 50 Barrels of Condensate

Sterling Oil & Refining Company, which last week opened a new gas-condensate producing area in Lavaca County, 4 miles east of the Brushy Creek field with its Mary Hoffman 1, made a flow test resulting in a gauge of 50 barrels of condensate and 2,486,000 feet of gas per day through a 3/16-inch choke through perforations at 7716-50 feet, where it was perforated with 144 shots. Tubing pressure showed 2400 pounds and casing pressure 2200 pounds, flowing. Operators are now moving to a new location a mile west and toward the Brushy Creek field which may prove this area to be part of the structure.

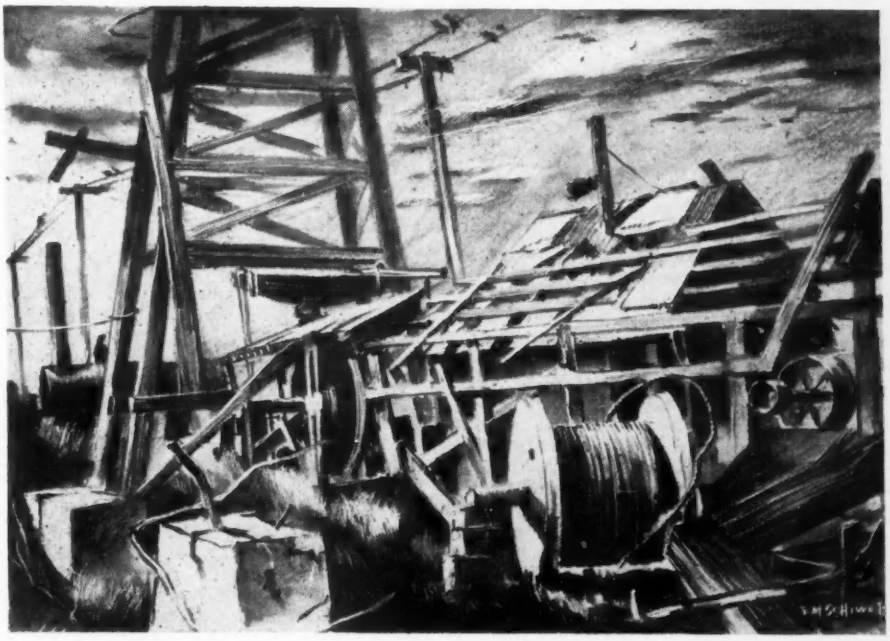
Moran Gas Company's Joe W. Lell et al, 4½ miles southwest of Hallettsville, James Kerr Survey, was still testing at the close of the week, although it was expected to have tankage ready in time for a potential test over the weekend. Perforations were made at 5914-18 feet and at latest report it was flowing through a ⅛-inch choke, making 38.6-gravity oil along with 25 to 30 percent water. Tubing pressure was 425 pounds and casing pressure 540 pounds. This well was drilled by Jack Frazier to 7690 feet and turned over to Moran after setting the casing at 5930 feet.

Bee County: Magnolia Petroleum Company is still getting showings of gas and oil in its W. E. Erp 1, 9 miles west of Pettus, but has not found a sand body thought large enough to sustain commercial production. On the latest reported test it ran a drill-stem test at 6780-83 feet, showing a strong blow of gas and recovering 90 feet of mud cut with oil and gas. Earlier, a showing had been reported in sand at 6655-59 feet. It is now coring below 6783 feet.

McMullen County: Edwin M. Jones' Ezzell C-4, more than ½ mile southwest of the discovery well in the San Caja field, is awaiting cement after setting the 7-inch casing to 7075 feet, total depth. Wilcox sand was found at 6917-40 feet, top of water being placed at 6938 feet, and a squeeze job probably will be made before completing. The upper, Carrizo sand, was found at 6458 feet, showing gas and condensate on a drill-stem test.

Humble Oil & Refining Company's

PIONEERS ★ ★ ★ *from a lithograph*



OLD STANDARD RIG — *By E. M. Schiwetz*

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E. M. Baker 1, wildcat 7 miles south of the San Caja field, is drilling at 5692 feet, still some distance above the Carrizo and Wilcox sand objectives.

Atascosa County: Humble Oil & Refining Company is preparing to make a production test in its Lockwood 1, expected to extend the new Charlotte field 3900 feet to the southwest. Depth is 6919 feet in the Edwards lime, and casing was set on bottom. Perforations are being made at 6892-97 feet, toward the top of the formation.

Brooks County: Standard Oil Company of Texas is still testing in the lower Vicksburg sand in an effort to open deep production at the Alta Mesa field with its Braulia G. de Garcia 4, having shown gas and distillate on a drill-stem test at 8074-8106 feet in open hole. On next test it built up to 1250 pounds working pressure in 50 minutes, using ¼-inch chokes at top and bottom after perforating at 7387-7400 feet. However, pressure dropped to 400 pounds in 2 hours and 10 minutes after it started flowing salt water. It will squeeze off perforations for another test, possibly in the deeper sand.

Texas Gulf Coast

Deep Wilcox Sands to Be Tested in Cleveland Field

Deep Wilcox sands are to be tested in Gulf Oil Corporation's Kirby Lumber Company C-22, Cleveland field, Liberty County. The well was drilled to make a thorough test of the Wilcox formation, going 2448 feet deeper than the previous deepest test in the field, and 3500 feet into the Wilcox. Total depth is 12,523 feet, and a string of 5½-inch casing was set to bottom for a series of tests throughout the section. One gas sand was found at the bottom and will probably be the first sand tested. The other deep test in the field, Gulf's Kirby C-21, had gone to 10,075 feet, and plugged back to 9100 feet for completion as a gas-distillate well. Gulf has since made location for its Quinn B-1 as another deep test south of this well.

Shell Oil Company has made location for a 12,250-foot Wilcox test, the Grogan Manufacturing Company 1, on a 526-acre lease in the Clayton Harper Survey in the northwest part of the county.

Harris County: Eltex, Limited, opener of the new Spring field in the northern part of Harris County, has made location for another Harris County wildcat. The new test is to be the Mrs. Anna Scott 1, HT&B Survey 1, a mile easterly from Westfield, and 5 miles southeast of the new oil field at Spring. Rig is now being moved in to location. Meanwhile Eltex has spudded and is preparing to set surface casing in its Blanche Bender 1, east offset to the Spring discovery well.

Humble Oil & Refining Company's O. P. Woodburn C-1, north outpost to the Webster field, in the southern part of the county, is drilling below 2500 feet in shale.

Humble has indicated it will drill a deep test in the Clear Lake field, having made location for J. C. Hutcheson 9, to drill to 10,500 feet.

Brazoria County: Gulf Oil Corporation has landed a string of 7-inch liner in its Mrs. S. M. Allen 2, deep test on the flank of the Allen Dome, and is standing, waiting for cement to set with total depth 10,447 feet. Operators had previously set 7200 feet of 9⅝-inch protection casing, and this string at bottom may be part of the program of protection for the hole, as the objective of this well is to go through the Frio section, and they may drill below this liner. No reports of showings have been made.

Humble Oil & Refining Company's Frank Schmidt 1, on the south flank of the Danbury Dome, is awaiting cement after making another squeeze job at 6978-84 feet.

Colorado County: Sinclair Prairie Oil Company's Tulane Gordon 1, will be a new wildcat in the New Ulm area in the northeast part of the county, located a mile southwest of the discovery well drilled by the company several months ago. Location will be in the northwest corner of the Peter Piper Survey.

Tide Water Associated Oil Company's Underwood 1, wildcat 3 miles northwest of the Sheridan field, is drilling at 8850 feet in shale.

Wharton County: Humble Oil & Refining Company's Donald & F. B. Duncan B-2, Hungerford area, has been abandoned after the tests failed to show for production in either the shallow or deep sands. It had set casing after getting showings in the Cockfield sand at 7289-95 feet, but showed salt water on production attempt. Other tests at 3812-22 feet, 3275-83 feet, and 2900-08 feet also showed water.

Amerada Petroleum Corporation's Daboval 1, wildcat 8 miles southwest of El Campo, is testing after perforating casing at 7025-28 feet. Total depth is 7430 feet with 5½-inch casing at 7146 feet.

South Louisiana

West White Lake Field Has First Oil Production

Union Oil Company of California has opened the first oil production found in the West White Lake field, Vermilion Parish, in completing its State-White Lake A-2 through perforations at 10,684-688 feet making 126 barrels of 37.4-gravity oil daily through a ⅛-inch choke with tubing pressure 3150 pounds. This is the second well in the field, being ¾ mile northwest of the discovery, and is in the same sand from which the other well produces gas and condensate. Further drilling will be necessary before determining whether there is some separation in the producing formation from the gas-distillate in the first well. An upper gas pay had already been established in this well with dual-completion slated, but it is being completed in the one lower sand. About the same distance southeast of the discovery well, Union of California is drilling its State-White Lake B-1, now around 7000 feet deep, and within a few hundred feet of an upper sand found in the other wells.

Calcasieu Parish: Continental Oil Company and W. T. Burton's Glenn Greathouse 1, deep wildcat south of Lake Charles, has apparently found showings enough to warrant a production test, since after running electric log to 11,178 feet, it has started running a string of 7-inch casing. The depth of the showing has not yet been reported. This wildcat is 5 miles east of the East Moss Lake field recently opened by Continental on the Prairie Land & Canal Company acreage. In the latter area Continental has set the 5-inch liner to total depth of 10,500 feet in its Prairie Land & Canal Company 2 and is preparing to test.

Acadia Parish: Union Sulphur Company's Gueno 3, Branch area, has been considerably delayed in testing since it first identified the new deeper sand around 11,100 feet, but after repairing a leak in the lower part of the liner, it made another drill-stem test in the perforations at 11,085-090 feet that indicated it should produce crude oil. On the test, open 18 minutes, it recovered 15 stands of 43-gravity black oil with working pressure 4500 pounds. It is now preparing to complete.

In the Egan field, Sun Oil Company's Button 1, located 4000 feet southwest of production, was fishing at 8037 feet and has come back up the hole and sidetracked at about 7667 feet.

Jefferson Davis Parish: Continental Oil Company's King Corporation 1, wildcat in the Bayou Serpent area, back in the hole is drilling again at a depth of 9302 feet after setting a string of 7-inch casing to 8170 feet. Unofficial reports are that a showing of oil was found at 7150 feet, and another at 7780 feet, through which the casing was set before drilling to contract depth. This wildcat is southwest of one, and northwest of another previous wildcat on this prospect, the most northerly of which, located in 29-7s-6w, stopped at 7510 feet. The other, in 32-7s-6w, was drilled only to 7095 feet.

North Louisiana

New Gas Field Indicated In Caldwell Parish

A new gas field is indicated in the northern portion of Caldwell Parish, at Shell Oil Company's Louisiana Central Lumber Company 1, NW 31-15n-3e, which blew out 13 stands of drill pipe and demolished the derrick after control valves stuck. The well was closed in by applying pressure on the rim of the master gate valve. The well was at total depth of 10,141 feet, with open hole below 6514 feet, where 9⅝-inch casing was cemented. Operators will have to rebuild derrick before resuming operations.

Tensas Parish: California Company's Joe Pasternock 1, 27-9n-10e, which was reported to have opened Eutaw distillate production for the first pay of this kind in the Lake St. John field, is now thought to be producing from the upper Tuscaloosa horizon. Perforations are at 8390-8402 feet. The company will complete from the Massive sand section at 9130-75 feet, which showed good saturation. Total depth is 9210 feet.

Chicago Mill & Lumber Company's Mutual A-1, 30-12n-10e, was a failure. It went to 8306 feet with no shows, picking up Marine Tuscaloosa at 8014 feet and sand at 8256 feet.

Union Producing Company tested Penrod-Jurden 10 in 20-11n-10e, Holly Ridge field, in 2 horizons. It flowed 503 barrels of oil in 24 hours through 13/64-inch choke on tubing from pay at 8375-95 feet, and flowed 84 barrels in 4 hours from Penrod sand at 8282-94 feet on ¼-inch choke on casing. Total depth is 8420 feet. The well will be dual com-

pleted if permit is granted by the Louisiana Department of Conservation at a hearing October 3.

Bossier Parish: Barnsdall Oil Company completed running electrical survey to 8765 feet in the Cotton Valley topped at 7554 feet and has set string of 7-inch casing on bottom at J. T. Hanks 1, NW SE 7-20n-12w, 6 miles northeast of Benton. Samples of Cotton Valley carried oil odor. Drilling may be resumed to lower formations.

Webster Parish: The Carter Oil Company officially completed N. P. Davis 1, C NE NE 33-18n-8w, to open a new gas field. On a 6-hour test the well flowed 2,850,000 feet of gas per day through a ¼-inch choke on tubing. Shut-in pressure is 2350 pounds. Hope Natural Gas Company will connect to the well and take production.

DeSoto Parish: Southern Production Company, Inc., has been granted a permit to drill C. W. Faris 1, NWc SW NE 18-11n-15w, to the Jeter zone in the Logansport field. The well is now waiting on cement at 1800 feet. Milton J. Houston et al abandoned Dorothy L. Nickey 1, 30-12n-10e, at 2916 feet.

Catahoula Parish: Stanolind Oil & Gas Company has staked location for J. M. Jones 1, C SE SE 25-10n-8e, proposed 8700-foot wildcat test of Foules, 10 miles southwest of Holly Ridge production, Tensas Parish.

Concordia Parish: The California Company is drilling below 1000 feet in Applegate 7, 14-9n-10e, Lake St. John field. The well is to be a 12,500-foot test, the deepest ever drilled in this sector.

Arkansas

Columbia Test May Point To Link in Atlanta Fields

Completion of Tide Water Associated Oil Company's T. H. Sanders 1, C SE NW 17-18s-19w, West Atlanta field, Columbia County, may indicate the possibility of a connection betwen the Atlanta and West Atlanta fields. The well is slightly higher on structure than other producers to the west. It gauged 190 barrels of oil in 24 hours through a ⅛-inch choke on tubing from perforations at 8274-77 feet.

Atlantic Refining Company's C. O. Scott 1, 8-18s-22w, is the first dry hole in the Dorcheat-Macedonia field. It went to total depth of 8935 feet, and tested 13 times in the Cotton Valley section, but was unable to find a productive horizon. It may be converted into a salt water disposal well.

Ouachita County: Grady Vaughn's J. F. Haltom 1, NE NE SE 28-15s-18w, went to total depth of 6264 feet and plugged back to 3701 feet. A short string of casing was set from 1954-3700 feet, but at 1954 feet the well blew out in gas from the Buckrange formation. It was killed and casing recemented. Drilling rig was dismantled and will be replaced with a standard rig to test.

Nevada County: G. H. Vaughn's J. K. Nixon et al 1, SW NE SE 6-15s-20w, was drilling below 3000 feet, but has reported no shows.

Pope County: Stanolind Oil & Gas Company was drilling in shale below 3780 feet at G. B. Maxwell 1, C SE SE 18-8s-18w. The wildcat is drilling with cable tools and has been making slow progress.

Johnson County: Arkansas-Louisiana Gas Company's S. M. Hudson 1, SE NE 5-10n-24w, the deepest test drilled in the Clarksville field, is in hard white sand at 5500 feet. Plans are to take the well to the Arbuckle lime.

Bolivia Expanding Fields

The government of Bolivia has reported successful completion of several new wells in the Camiri and Sanandita fields, near the Argentine border. The new wells may have extended producing areas of both fields, since total Bolivian production is currently about 21,000 barrels per month, a 30-percent increase over the 1943 yield. Intensive exploration work also is in progress in the Bermejo field area, where before the year's end an effort will be made to extend production northward. Explorations are continuing in the Lake Titicaca region.

Tectonic Map Complete

Dr. Chester R. Longwell, professor of geology at Yale University, has announced completion of a tectonic map of the United States, showing major structural trends and local folds and faults that have been recognized by geologists throughout the nation.

The map represents the results of nine years of work by a committee of 16 geologists, headed by Professor Longwell and including representatives of National Research Council, American Association of Petroleum Geologists, Geological Society of America, and United States Geological Survey.

Five thousand copies of the map, 6½ by 4 feet in size, are being lithographed for distribution in October. Details will be announced by AAPG.

Southeastern

Lamar County Test Seems Certain to Be Producer

Most important test now drilling in Mississippi is Gulf Refining Company's C. V. Cooper 1, Lamar County, which although drilling at a depth of 7894 feet, has already shown enough in the Eutaw formation to assure a well, either oil or distillate. On the latest drill-stem test, at 7832-74 feet, open 30 minutes with ⅜-inch choke at bottom and ¼-inch at top, it showed 2150 pounds working pressure at surface, and recovered 1200 feet of oil and mud and 90 feet of mud, no salt water. The seat failed to hold perfectly, accounting for all the mud, but the fluid was thought to be about half oil, gravity not checked. It will go ahead to the Tuscaloosa section regardless of what other showings are found in the Eutaw. First showing was on a test at 7736-86 feet when it showed gas with a rainbow showing of oil. Test at 7786-7816 feet showed gas and 180 feet of 45-gravity oil, and the latest test was made after recovering 14 feet of sand showing oil in the last series of cores. This area is 56 miles southeast of California Company's recent discovery at Mallalieu in Lincoln County, and would be the most southerly production in Mississippi.

On the flank of the old Tatum salt dome, Shell Oil Company's Hibernia Bank & Trust Company has drilled to 6000 feet and taken side-wall cores before going deeper

Adams County: The Pure Oil Com-

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pany's McDowell 2, in 12-6n-3w, southwest of the Cranfield field in the central part of the county, showed water on the first test, after perforating liner at 10,320-325 feet, below the casing seat, and has cemented before making the next test.

In the Cranfield area, California Company's Whittington 1, the tenth producer for the field, flowed 345 barrels of oil and 12 barrels of salt water through a 5/32-inch choke during potential test, having perforated in the Massive Tuscaloosa at 10,314-344 feet for the completion.

Jasper County: Kingwood Oil Company's E. V. Hill 1, which extends the Heidelberg field more than a mile to the south, has installed pumping equipment and on final completion pumped at the rate of 170 barrels of oil, 7 percent basic sediment and water, daily through perforations at intervals from 4914-4933 feet.

Rogers Lacy's Newell Unit 1, has been completed as one of the best producers in the Heidelberg field, making 160 barrels in an hour before taking final gauge. The official test was taken through a smaller choke, however. Even so it made 550 barrels in 24 hours through a 3/32-inch choke from perforations in 7 sands between 4648 and 4900 feet.

Jefferson Davis County: Superior Oil Company has made location a mile southeast of the Sid Richardson discovery well in the Gwinville field. The Willie Durr 1 will be in 19-9s-18w, and should start immediately.

Gulf Refining Company's Mullins 1, wildcat test 2½ miles southwest of the Richardson discovery well, is drilling below 6205 feet in shale.

Stone County: Harry I. Morgan's Wilbe Lumber Company 1, in 1-3s-11w, and 6 miles southeast of Wiggins, is drilling below 7524 feet in shale.

Florida

Florida activity slowed recently. In Dade County, Humble Oil & Refining Company's State 1, C NE NW 30-55s-36e, finished a fishing job for drill pipe at 6284 feet and is conditioning hole. Total depth is 9284 feet. Florida Oil & Refining Company's Everglades 1, 31-53s-35e, is still shut down at 10,201 feet, after running electric log at 9735 feet. Top of Norstaff was picked at 8367 feet.

Collier County: Humble Oil & Refining Company's Gulf Coast Realties 2, C SW SE 30-48s-30e, halted at 13,512 feet and is fishing. This is Florida's deepest test, but so far has picked up no commercial shows. The same company is moving in at Gulf Coast Realties 4, 20-48s-30e, Sunniland area.

Gulf County: The Pure Oil Company's C. C. Hopkins 1, C SW SE 21-6s-9e, drilled plug and is going ahead at 3100 feet.

Alabama

In Washington County, Alabama, Humble Oil & Refining Company's J. R. Williams B-1, C SW NW 20-6n-4w, was drilling at 5580 feet in shale. The Texas Company's N. S. Stallsworth and Company 1, C SW NW 10-3n-3w, is drilling below 900 feet; and A. C. Derr, Trustee's Hobson 1, C SW NE 9-8n-2w, rigged up and shut down.

Escambia County: Hunt Oil Company's Harry B. Jones 1, C SE SE 3-1n-11e, is drilling below 2356 feet in shale, with 10-inch casing set at 590 feet.

Rocky Mountain Area

Tensleep Limits on East Of Garland Field Proven

Abandonment of General Petroleum Corporation's Williams 1, SWc Lot 51-56n-97w, proved the productive limits of the Tensleep sand on the east side of the Garland Dome field, Big Horn County, Wyoming. The Tensleep was logged at 4680 feet and on drill-stem test showed 3340 feet of water in 15 minutes. The well was plugged back from 4714 to 4526 feet to test the Embar, top at 4481 feet, in which some saturation was reported.

East Utopia: The Texas Company's Nick Laas, NW SW SW 14-33n-4e, East Utopia area, Liberty County, Montana, is showing for a gas discovery in the Madison lime at a total depth of 2610 feet. The well is now standing cemented with 5½-inch casing landed 6 feet off bottom. On drill-stem test, the well gauged 25,000,000 feet of gas with a working pressure of 600 pounds and a shut-in pressure of 1000 pounds.

Mifflin Dome: The Carter Oil Company has abandoned its Madison test on Mifflin Dome, Yellowstone County, Montana, which drilled to a depth of 4284 feet without encountering production. The well, Crow-Tribal 1, C SW NW 17-2s-29e, logged top of the Tensleep at 3683 feet.

Wyoming Picked as Site For Synthetic Fuel Plant

First of the plants to be built by the Bureau of Mines for the demonstration of the commercial possibilities of producing scynthetic liquid fuels from coal, shale and agricultural and forest products will be an oil shale research and development laboratory at the University of Wyoming, Interior Secretary Ickes announced last week.

The laboratory will be an adjunct of the bureau's petroleum experiment station at Laramie, Wyoming, and will also handle problems arising in the operation of an oil-shale demonstration plant which it is proposed to build in the Green River formation of Colorado, Utah and Wyoming. The laboratory will cost $480,000 and will require a staff of 70.

Shale oil reserves of the United States are estimated to contain about 92,000,000,000 barrels of oil, roughly four to five times the known petroleum reserves of the United States and enough for more than 60 years at the present rate of use. Oil is being produced from oil shale in Scotland, Sweden, Germany, France, Estonia, Australia, South Africa, Japan and other countries, but the shales and processing methods differ from country to country.

California

Discovery Near Belridge Good for 300 Barrels

Rothschild-Bender Oil Operations-Sheep Springs 2, SE SE 17-29-21, new discovery southwest of Belridge, was good for 300 barrels per day, 25-gravity oil, cutting 20 percent mud and sand from 3487-3450 feet in Carnerous Silt, Miocene age. The first try was dry, but several more locations are being surveyed.

Fresno County: General Petroleum Corporation's Cryan 1-32, 32-16-19, Riverdale area, has abandoned at 8142 feet. As in other wells, both outpost and in the productive area, the lenticular position of the sands classify most all wells as wildcats.

The Texas Company's Hawhurst 11-6, 6-22-16, Jacalitos area, has been abandoned after a recovery of mud on a drill-stem test at 4837-4857 feet.

Standard Oil Company's K.C.L. 20-13, 5-31-23, had 36 feet more to drill to establish a new California deep well record. The well was at 14,970 feet.

Los Angeles County: General Petroleum Corporation's Heath 1, 34-3-11, is pumping 130 barrels per day of 28-gravity clean oil from a depth of 11,200 feet.

Michigan

Seismograph-Located Test Produces in Bay County

First seismograph located discovery in Michigan's history, Shell Oil Company's Koth 1, SW NE NW 2-16n-4e, Bay County, flowed 145 barrels of 37-gravity oil on 3-hour test from a single half-inch casing perforation in Dundee at 2900 feet. Well was shut in for storage and probably will get more perforating at a later date. The single shot actually was not intended to be made for production but to test for cement after casing at 3012 feet.

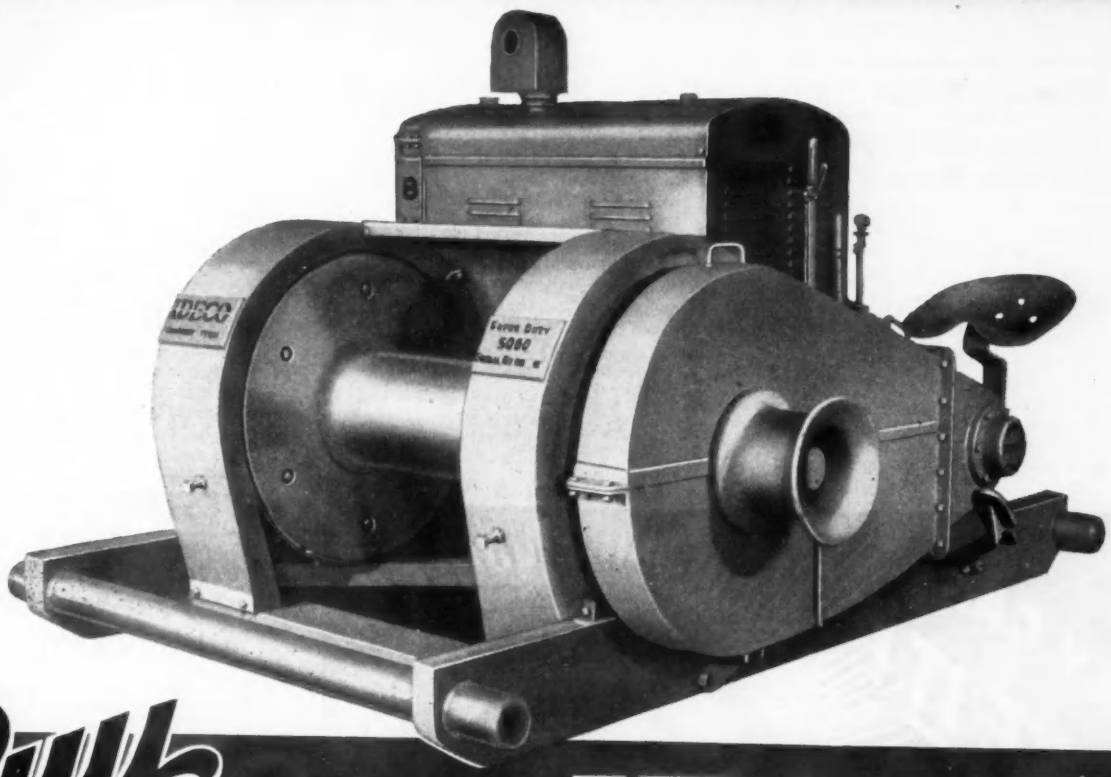
Log from cores had established Dundee top at 2823 feet with dolomitic limestone at 2798 feet, and pay below 2911 feet. Cores indicated a potential pay section of more than a 60-foot thickness in the Dundee to give the discovery promise of a major find.

Mecosta County: First completion in the new west extension play of the Fork field, Gordon Oil Company's Winslow 1, S½ NW NW 12-16n-8w, south offset to the discovery, was dry in the Dundee dolomite at 3901 feet. Its failure cut off at least 30 percent of the area that had been indicated proven by Sun Oil Company's mile extension.

Isabella County: Sohio Petroleum Company completed the Cummings 3, N½ SW NW 33-16n-6w, south offset to the Coldwater pool discovery, for 321 barrels oil natural in the first 24 hours in Dundee lime from 3692-3700 feet. Same company's Cummings 4, N½ NE NE 32-16n-6w, direct west offset to the discovery, was bottomed at 3820 feet after testing Monroe section dry. Casing will be set through the Dundee where a 37-foot pay section was cored, 3690 to 3727 feet, and completion made by perforating in the upper horizon.

Washtenaw County: I. C. Chamness' Roddenberry 1, NE SE NE 27-1s-7e, cased at 5006 feet after logging a gas show in the Knox dolomite but when drilled to 5020 feet no commercial pays had been logged.

Arenac County: Basin and Rayburns' completion of the Panasink 1, NW SE SW 9-19n-4e, in Dundee at 2777-87 feet for initial potential of 5500 barrels per day, increased interest on the southeast end of the pool. Swanson Oil Company's Scott 1, NW SW NW 10-19n-4e, mile east extension bid to the Deep River pool, logged Dundee at 2838 feet and at 2900 feet was shut down for orders.



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Illinois Basin

Semi-Wildcat Has Show From Rosiclare Sand

Carroll et al's George Rudy 1, SW C 24-12n-7e, outpost in the Mattoon pool, Coles County, showed for 50 barrels per day production from the Rosiclare sand at 1978-84 feet after plug was drilled and the well was given a 20-quart shot.

The well swabbed a barrel of oil an hour after plug was drilled and then began swabbing more than 2 barrels per hour after the shot.

Hamilton County: Phillips Petroleum Company's Leach 1, SE SE NE 12-4s-6e, 1½ miles from production, southeast, in the Bell Prairie pool and 2 miles northwest of Blairsville pool, pumped 100 barrels of oil per day from McClosky lime at 3425-35 feet.

Richland County: Phillips Petroleum Company has set casing at Richland 1, NE SE SE 6-2n-10e, semi-wildcat ½ mile south of a recent pool opening well. It flowed oil in 11 minutes during drill stem test of McClosky lime at 3150-59 feet. Total depth is 3160 feet. The discovery to the north produced 200 barrels of oil daily initial.

Clay County: The Texas Company's Rose 1, NW SE NE 10-5n-5e, prospective pool opener, was preparing to drill plug for production test after plug-back to 2360 feet. Original depth was 2559 feet.

Kentucky

Gulf Refining Company has given the Powell Lake pool a pay horizon at Rankin 2, 16-Q-20, Union County. It pumped 125 barrels of oil in 24 hours from the Pennsylvania sand at 1185-1215 feet. Only two other producing wells are in the pool and both are producing from the Waltersburg sand.

Indiana

Rogers Cartage Company's Deacon-Lynch 1, SE SW SW 25-7s-15w, discovery 2 miles east of the New Haven pool of Illinois, pumped 55 barrels of oil in 24 hours from McClosky lime at 2800-05 feet after 3000 gallons of acid. The well is 5 miles southwest of the Upton pool, Posey County.

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WESTERN CANADA

Alberta Association Asks Subsidy for Small Wells

A subsidy of 35 cents per barrel on oil produced in Alberta from wells having a production of 25 barrels daily and under was urged on the Dominion Oil Controller by the Alberta Petroleum Association. The controller, G. R. Cottrelle, was meeting with spokesmen for the APA in Calgary. The association urges a federal subsidy on the grounds that it would permit commercial operation of many Alberta wells incapable of producing over 25 barrels daily, thereby bolstering domestic supply, and encouraging development in areas where average well production is small.

Norcanols Oil & Gas Company has extended its operations to the Swift Current area, in the southwestern corner of Saskatchewan. The Norcanols-Swift Current 1 has been staked in lsd 11 20-13-13w3rd, 12 miles south of the city from which it derives its name.

Spudded May 28, Shell Oil Company of Canada's 4-24-J at Jumping Pound is below 8200 feet with latest markers showing the well logging close to original expectations. The Blairmore which, barring faulting, would be 1500 to 2000 feet above the Madison lime objective, showed up at 7680 feet. Original lime estimate was 10,000 feet. This wildcat is located about 5½ miles north and 2 miles east of the Shell-Norman 1, which drilled beyond 12,000 feet in 1943, to encounter water in the Madison.

Junior AIME

Tubular goods were discussed by John DeHetre, engineer for Youngstown Sheet and Tube Company, before 45 members of the Southern California Junior A.I.M.E. at Downey, California.

John Hills and Bill Chenette, development engineers for General Petroleum Corporation and The Texas Company, respectively, discussed casing and drill pipe.

Growth of Tanker Fleet Is Reported by Admiral

The prewar United States tanker fleet of 440 vessels of approximately 5,501,000 deadweight tons had grown to 580 tankers of 7,627,700 deadweight tons under the control of the War Shipping Administration by the end of 1943, with an undisclosed number of tankers among the 500 other ships transferred to the Army and Navy, it

was reported by the WSA September 23.

Although many of the accomplishments of the WSA still must be kept confidential for national security, Administrator Emory S. Land, reporting to President Roosevelt on the activities of the agency from its inception in February, 1942, to the close of last year, revealed that between Pearl Harbor and mid-1944 our merchant marine nearly trebled in number of ships and tonnage, increasing from 1340 vessels totaling 11,850,000 deadweight tons to more than 3400 ships in excess of 35,000,000 tons.

During 1943, Land said, a total of 15,086,000 long tons of petroleum products was carried by tankers to the battle fronts. An additional large volume of oil was carried in the bunker oil tanks and double bottoms of dry cargo ships while, in a sort of reverse-lend-lease, tanks carried dry cargo, including airplanes, on their decks.

To attain the proportions of the present tanker fleet, Land pointed out, it was necessary to build not only the 140 vessels and 2,500,000 tons by which it has increased but also the tonnage to offset that which was sunk in the early days of the war and to lessening extent thereafter, by enemy action.

Just how great these losses were was not disclosed, but Land reported that in the first half of 1942 we were able to build only one-third more tonnage for the merchant fleet than was sunk and it was not until the last half of the year that ships began to come off the ways at a rate three times or better the tonnage lost.

Cretaceous Maps Available To Petroleum Geologists

Aid to petroleum geologists concerned with regional correlation of the Cretaceous rocks which have furnished most of the oil and gas produced in the Rocky Mountain region, is given by a group of 10 maps, published by the Geological Survey, Department of the Interior.

The maps show the distribution and character of the sedimentary rocks of Lower Cretaceous and Upper Cretaceous age and the distribution and character of the rocks of eight faunal-stratigraphic units comprising the Upper Cretaceous series. These Cretaceous rocks, many of which were deposited in an ancient sea that extended southward from the Arctic Ocean to the Gulf of Mexico, have a maximum thickness of more than 20,000 feet in the southwest corner of Wyoming and also in the southwest corner of New Mexico. The variation in thickness of each unit is shown by isopach lines determined from records of thickness at more than 150 localities in the United States, southern Canada, and northern Mexico. The maps are accompanied by an index map and a diagram showing the correlation of representative Cretaceous formation sequences in the western marginal belt, the Rocky Mountain belt, and the Great Plains belt.

The sheet of maps has been issued as Preliminary Map 10 of the Oil and Gas Investigations series. Copies of this map, entitled "Thickness and general character of the Cretaceous deposits in the western interior of the United States" may be purchased from the director of the Geological Survey, Washington 25, D. C. at 25 cents each.

U. S. Exploratory Completions

ARKANSAS WILDCATS

Calhoun County—Failure: J. T. O'Neil's Helen Gaughan 1, c ne ne 15-14s-16w, elev 103 ft, abnd 4345 ft.

Ouachita County—Failure: Skelly's Sallie Russell 1, c ne se 19-13s-18w, elev 220 ft, Travis Peak 2265 ft, Cotton Valley 2870 ft, Buckner 3660 ft, td 3990 ft.

CALIFORNIA WILDCATS

Kern County—Oil Discovery: British American-Capital Co.'s Portals 53, se ne 3-30-29, n of Edison field, flow 250 bbls 37-gr fr Olcese 4733-70 ft, td 4770 ft.

Tulare County—Failure: L. B. Tannehill et al's Hunsaker 1, nw se 17-23-27, abnd in slate 2330 ft.

COLORADO WILDCAT

Larimer County—Failure: Amerada's Rohrbacher 1, c se sw 32-11n-68w, Sand Creek, Dakota 6846 ft, abnd 6956 ft.

ILLINOIS WILDCATS

Clay County—Failure: Magnolia's Iffert 1, ne ne se 27-5n-8e, abnd 3167 ft.

Clinton County — Failure Northern Ordnance's Yaap 1, sw nw 1-3n-2w, abnd 783 ft.

Effingham County—Failure: Joe Bander et al's MacSmith 1, sw sw ne 33-9n-5e, abnd 2252 ft.

Fayette County — Failure: Nation Oil's Smith 1, sw se se 14-6n-3e, abnd 2225 ft.

Franklin County—Oil Discovery: H. R. Randall et al's U. S. Coal & Coke 1, nw sw sw 14-5s-2e, pump 42 bbls, Aux Vases 2679-2711 ft, td 2716 ft.

Lawrence County — Failure: Texas Co.'s Lathrop 1, se sw ne 28-4n-13w, abnd 2491 ft.

Marion County—Failure: Skelly's Wilson 1, se se nw 36-1n-4e, abnd 2960 ft.

Wayne County — Failures: Amisco, Inc.'s Clay 1, nw nw se 16-1n-7e, abnd 3251 ft.

Pure's Jones 1, ne nw ne 36-1n-8e, abnd 3249 ft.

White County—Oil Discovery: Great Lakes Carbon's Burris 1, sw ne se 7-7s-10e, pump 50 bbls, Tar Springs 2303-22 ft, td 3115 ft.

INDIANA WILDCATS

Pike County—Oil Discovery: H. C. Detrick's Knick 1, se nw nw 8-1s-7w, pump 18 bbls, Cyp 1135-40 ft, td 1140 ft.

Posey County — Failure: Farm Bureau's Garris 1, ne se ne 4-5s-12w, abnd 2769 ft.

Sullivan County—Failure: Deep Oil's Gross 1, se se sw 3-9n-10w, abnd 2388 ft.

KANSAS WILDCATS

Barber County—Gas Discovery: Dickey Oil's Hargis 1, se sw 3-31s-14w, flow 4,000,000 ft gas, perf 43 shots 4386-4404 ft, perf 92 shots 4415-31 ft, 5000 gals acid, td 4431 ft.

Cowley County—Failures: Hall & Horrall's Atkinson 1, sec 13-32s-5e, Lay 2310 ft, Miss 3062 ft, Barts sd 3017 ft, abnd 3120 ft.

Texas Co.'s Booton 1, nw sw sw 21-34s-3e, Simp 3737 ft, Arb 3802 ft, abnd 3847 ft.

Ellis County—Failure: Sunray's Christen 1, sec nw 3-15s-20w, KC 3372 ft, Arb 3739 ft, abnd 3759 ft.

Greenwood County—Oil Discovery: K. T. Weideman's Petterson 1, se ne ne 19-27s-11e, pump 25 bbls oil, Miss 1995 ft, td 2467 ft.

Kiowa County—Gas Discovery: Lion Oil's Alford 1, sec sw 14-30s-19w, flow 3,200,000 ft gas, si 1100 lbs, perf 48 shots 5039-53 ft, 15,000 gals acid, td 5779 ft.

Pratt County—Failure: Phillips' Chaparral 1, sw sw sw 18-27s-11w, Lans 3680 ft, Miss 4140 ft, Vi 4336 ft, Simp 4438 ft, Arb 4525 ft, abnd 4535 ft.

Rooks County—Failure: Dolly Oil's Kern 1, nwc sw 11-9s-20w, Lans 3329 ft, Cong 3628 ft, Arb 3657 ft, abnd 3707 ft.

KENTUCKY WILDCATS

Henderson County—Oil Discoveries: Nat. Assoc. Pet.'s Rudy 1, 4-O-23, pump 70 bbls, Cyp 2246-51 ft, td 2251 ft.

Burbank's Fee 10, 3-P-21, pump 52 bbls, Tar Springs 1912-22 ft, td 1922 ft.

Henderson County—Failure: Ohio's Farmers Bank & Trust 1, 24-Q-20, abnd 2717 ft.

NORTH LOUISIANA WILDCATS

DeSoto Parish—Failure: Milton J. Houston et al's Dorothy L. Nickey 1, 270 fr nl 500 fr wl se nw 1-13n-13w, elev 145 ft, abnd 2916 ft.

Tensas Parish—Failure: Chicago Mills & Lbr. Co.'s Mutual A-1, 1980 s 1972 w of nec 30-12n-10e, elev 66 ft, Wilcox 2999 ft, Midway 5525 ft, Tuscaloosa 7468 ft, abnd 8256 ft.

Webster Parish—Gas Discovery: Carter Oil Co.'s N. P. Davis 1, c ne ne 33-18-8w, elev 224 ft, Paluxy 3535 ft, Glenrose 4120 ft, Anhydrite 4670 ft, Massive anhydrite 4920 ft, perf 330 shots 5465-5520 ft, test 2,100,000 dry gas, 4000 gals acid, flow 2,850,000 gas, ½-in, tp 1950 lbs, sip 2350 lbs, td 7600 ft.

SOUTH LOUISIANA OUTPOST

Vermillion Parish—W. White Lake Extension: Union of Calif.'s State-White Lake A-2, start USCGS Mon West go n 52° 12 mins 24 secs e for 13,000 to lcn in Lake T-14s-2w, 2645 n 1320 w of State A-1 disc well, perf 10,684-88 ft, flow 126 bbls 37.4-gr oil, 508,000 gas, 0.2% wtr, ⅛-in, 1st crude prod in gas field fr same sect, td 10,750 ft.

MICHIGAN WILDCAT

Allegan County—Failure: Neil Wagennar's Timmer 1, sw sw ne 6-4n-13w, Traverse lime, abnd 1631 ft.

MICHIGAN NEW PAY TEST

Missaukee County — East Norwich Discovery: Sun's Horner 12, s½ sw se 16-24n-5w, elev 1175 ft, Traverse 2406 ft, Dundee 3093 ft, pump & flow 19 bbls oil and wtr, td 3143 ft, pb 2642 ft.

MISSISSIPPI WILDCAT

Smith County—Failure: Hunt Oil's Smith County Oil 1, c nw ne 17-2n-7e, elev 363 ft, abnd 8369 ft.

MISSOURI WILDCAT

Caldwell County—Failure: A. R. Jones' Mays 1, sec 28-55n-29w, Miss 1130 ft, abnd 1357 ft.

NEW MEXICO WILDCAT

Lea County—Failure: Devonian Oil Co.'s State-Windfohr 1, c se ne 25-11s-35e, elev 4080 ft, anhydrite 2215 ft, San Andres 4310 ft, abnd 5130 ft.

OKLAHOMA WILDCATS

Garvin County—Failure: Ohio's Winterrowd 1, sw se ne 10-3n-1e, Belle City 2770 ft, Hog 3078 ft, McK 3138 ft, McL 3320 ft, abnd 3605 ft.

Garvin County—Failure: W. A. Delaney's Burke 1, nw nw ne 31-4n-3e, McL 2930 ft, abnd 3000 ft.

Greer County—Failure: E. M. Thomasson's Armstrong 2, nw nw ne 10-6n-21w, abnd 328 ft.

Hughes County — Failure: Creekmore-Rooney's Parks 1, sw sw ne 3-8n-10e, 1st Crom 3132 ft, 2nd Crom 3206 ft, abnd 3265 ft.

Hughes County—Failure: Eason Oil et al's MacKay Hrs 1, ne ne se 23-9n-10e, 2nd Crom 3284 ft, abnd 3300 ft.

Lincoln County — Failure: Wilcox Oil's Sewell 1, nw ne se 4-14n-6e, Verd 3247 ft, abnd 3250 ft.

Lincoln County — Failure: Ray Stephens, Inc.'s Hardesty 1, se se nw 20-17n-4e, Clev 3053 ft, 1st Wx 4432 ft, 2nd Wx 4462 ft, abnd 4470 ft.

Pawnee County—Failure: Continental's Morrow 1, ne se se 22-22n-6e, Wx 3097 ft, abnd 3362 ft.

Stephens County—Failures: Magnolia's Humphrey's 1, ne sw sw 31-2s-4w, abnd 1210 ft.

Phillips' Trout 1, nw ne nw 19-1n-4w, Culb 5298 ft, abnd 7009 ft.

Washita County — Failure: Helmerich & Payne's Haxton 1, ne ne nw 31-8n-15w, abnd 4578 ft.

WEST TEXAS WILDCATS

Crane County—Failure: Magnolia's Flood-State 1, 660 ft nw 660 ft sw of s cor sect 12, but in H&TC Ry. 20, blk 3, elev 2449 ft, anhydrite 310 ft, Yates 1340 ft, San Andres 2480 ft, Glorietta 3210 ft, base Permian 5400 ft, Waddell 5842 ft, Ellenburger 6090 ft, abnd 6181 ft.

Dawson County—Failure: Seaboard Oil Co.'s Weaver 1, 660 ft snl 4894 ft ewl Lge 2, Taylor CSL sur, elev 3029 ft, anhydrite 2130 ft, lime 4030 ft, San Andres 4660 ft, abnd 5113 ft.

WEST TEXAS OUTPOST

Andrews County—Union Extension: Union of Cal.-Helmerich & Payne's Redus 1-B, c sw sw PSL 22, blk A-31, 1⅞ mi s by w of prod, elev 3356 ft, Yates 2830 ft, San Andres 4460 ft, Clear Fork 6030 ft, Tubb 6570 ft, flow 210 bbls 41-gr, 48/64-in, 24,000 gals acid Wichita-Albany broken pay 6930-7415 ft.

WEST CENTRAL TEXAS WILDCATS

Eastland County—Failure: C. D. Lane et al's Butler 1, 200 ft out nec sec 1, C. T. Ry sur, abnd 1102 ft.

Jones County—Failure: Lewis Oil Co.'s H. Sayles 2-B, 3836 ft wel 330 ft nsl T&P Ry. 43, blk 16, abnd 2405 ft.

SOUTH CENTRAL TEXAS WILDCAT

Gonzales County—Failure: Maguire Ind.'s Lydia Sauer et al 1, 330 n of creek 330 e of wl 160-ac lse, Wm. Newman sur, abnd 2522 ft.

SOUTHWEST TEXAS WILDCATS

Duval County—Oil Discovery: Tom Graham's M. I. Richardson 2, 1320 fr sl 1650 fr wl 640-ac lse and GB&CNG sur 3, 660 n of No 1, pump 18 bbls oil, 15% wtr, td 1784 ft.

Duval County—Failure: Taylor Ref. Co.'s

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FOR SALE
New and Reconditioned Iron & Steel
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LARGE STOCK OF FITTINGS
APEX IRON & METAL CO.
2204 S. Laflin St. Chicago 8, Ill.

■ 2000 watt gasoline electric light plant. 22 amps. 115 volt. Two cylinder engine runs good. $200. Address: Box 8, c/o The Oil Weekly, Houston, Texas.

■ FOR SALE: Two Heine water tube boilers, 150 H.P. $1,400 each, f.o.b. Cuero. Boilers were retubed last year at a cost of $2,400. Can be seen in operation now.
Cuero Cotton Oil Company,
Cuero, Texas.

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Regular classified advertisements for this special section, set in type this size without border, take flat-rate of 7 cents per word for the first insertion and 5 cents per word for each subsequent insertion of same copy. Display advertisements for this section, set in suitably larger type with ruled border, are $5.00 per inch for the first insertion and $4.00 per inch for subsequent insertions. Remittance must accompany copy which should be sent to:
Trading Post Section, The Oil Weekly
P. O. Box 2608 Houston 1, Texas

BUSINESS OPPORTUNITIES

■ CAPITAL SEEKERS: Interested in raising $25,000 or more should write to Amster Leonard, Fox Bldg., Detroit 1, Michigan.

FOR SALE

■ FOR SALE: 9,000 feet 3½" O.D., Range 2, Drill Pipe with Hughes Acme Regular Tool Joints. 4,200 feet 3½" O.D., Range 1, Drill Pipe with Hughes Acme Regular Tool Joints. Located in Houston. Call or write telephone W 6-4484 or Box 1261, Houston, Texas.

■ FOR SALE IN EAST TEXAS — 4,000'—7" 24 lb. casing, 4,000'—5½" 17 lb. and 20 lb. casing, 9,000'—2½" upset tubing, 7—87' Ideco pumping derricks, 3 galvanized, 4 painted. Owned by independent producer and reasonably priced. V. Sapp, 1204 Republic Bank Building, Dallas, Texas.

HELP WANTED

■ Representative Wanted — Drop Forging manufacturer particularly well situated and equipped to serve oil industry wants capable sales engineer representative in Texas and Louisiana. Address: Box 10, c/o The Oil Weekly, Houston, Texas.

■ Petroleum or Mechanical Engineer with several years field experience in well completion and production preferably in the Gulf Coast area to promote sales of technical oil field services and equipment. Permanent position with good future for man with imagination, intiative, and genuine interest in sales engineering. Give full details of education, experience, and availability in first letter. All replies held confidential. Box 1, c/o The Oil Weekly, Houston, Texas.

■ Wanted, an ambitious man, under forty, to promote sales and service of oil well pumping equipment; interesting work with good post war aspects; engineering and oil production background desirable; initiative and ability to develop sales essential. Address: Box 14, c/o The Oil Weekly, Houston, Texas.

NOTICES

■ GEORGIA OIL REPORTS: 6 mo. sub. $6 Get posted. Keep posted. Also Base and County maps So. Ga. and North Fla. C. W Deming, Waycross, Ga.

FOR SALE—DRILLING EQUIPMENT FOR DEEP DRILLING
JUST PURCHASED

3—125 H.P. 350 W.P. F & T Boilers—completely reconditioned.
3—108 H.P. 350 W.P. Lucey Boilers—completely reconditioned. Certificates attached.
1—13⅝" Cameron SDA blowout preventer 3000-lb. test with 13⅝" master valve, all accessories and 4½" & 5½" rams.
6—300 Ton Emsco swivels, reworked, late type.
1—300 Ton Ideal swivel, reworked, late type.
2—Oil Well 12 x 12 vertical steam engines.
1—Oil Well 12 x 12 horizontal steam engine, piston type, complete.
2—Ideal 12 x 12 steam drilling engine, piston type, complete.
2—15½ x 7¾ x 20 Gardner-Denver steam slush pumps, 350-lb. steam ends.
2—14 x 7¾ x 18 Wilson-Snyder steam slush pumps, side suction type.
2—14 x 7¾ x 18 Wilson-Snyder steam slush pumps with Abercrombie steel end.
1—8½" Lucey Drawworks, jackshaft, completely roller bearing with Hydromatic brake—complete, and in excellent condition.
1—7½" Oil Well, jackshaft, completely roller bearing, drawworks—completely overhauled.
1—Wison Titan Drawworks with 350 H.P. Wilson motor & gear box—Completely overhauled—36" Hydraulic brake.
1—4½ x 10 Gardner-Denver power pump—late model, enclosed, high pressure fluid end, completely overhauled.
1—6 x 12 Gardner-Denver power pump—same as above.
2—7¼ x 14 Gardner-Denver power pumps, XEK model, roller bearing, enclosed, excellent condition.
1—27½" Oil Well Oilbath rotary, unitized with 7 x 7 Oil Well vertical engine, unitized into direct drive, on steel skids, excellent condition.

DRILL PIPE

6000' 4½" Flashweld, Range II drill pipe, bottlenecked.
5500' 3½" Hughes streamlined, full hole, Range II.
4000' 3½" Hughes regular, Range II, excellent condition.
6000' 2⅜" A.P.I. Reg. Range I, excellent condition.

ROTARIES

2—Hacker, water well, rotaries, all steel, complete with kellys.
2—17" Oil Well junior rotaries, make and break.
1—17" Lucey, rotary, make and break, roller bearing "bobtail".

PIPE

60,000' 6⅝" T. & C., 20, 24 & 26-lb., Range I, excellent condition.
20,000' 4½" T. & C., 11-lb., Range I, excellent condition.
25,000' 5" O.D., 17-lb., Range I line pipe, excellent condition.

ALICE PIPE & SUPPLY CO.

SAN DIEGO ROAD **ALICE, TEXAS**
Wire or phone 619 or 620 **We ship anywhere**

Antonio Caballero 1, 467 fr s&wl 175.8-ac tr, Las Anacuas Gr, abnd 5733 ft.

Webb County — Failure: Magnolia's Duval Rch-Lge 2-1, 330 fr swl 3038-ac lse 2316 s of m/sly/nl lot 9, Zapata CSLge 2, 15 mi w of Freer, abnd 1424 ft.

Zapata County—Failures: J. B. Hardwicke's Eleuterio Lopez 1, 330 ne of nel of sur 290 approx 1100 nw of sec of sur 290 on S. C. Hendrix sur 288, 1280-ac lse, 48 mi sw of Hebbronville, abnd 1036 ft.

Sid Katz's F. G. Trevino et al 1, 330 fr swl 330 fr sel blk 121 1060-ac lse, El Grullo Gr, sh 1, blk 121 of 1st subdvn, Mirando 842 ft, Pettus 999 ft, abnd 1510 ft.

LOWER TEXAS COAST WILDCATS

Kenedy County—Failure: Texas Co.'s Yturria Land and Livestock Co. 4, 660 fr sl 8653 fr m/wly/el 10,913-ac lse, San Juan de Carricitos Gr 660 n of lower sec sh 1, abnd 7504 ft.

San Patricio County — Failure: W. Earl Rowe et al's J. E. Thompson et al 1, 660 fr nel 1600 fr nwl 260-ac lse, M. G. Frazier sur A-118, sd 4350 ft, abnd 4808 ft.

Victoria County—Failure: G. W. Strake's Tom O'Connor Jr. et al 3, 700 fr wl 1700 fr sl T&NO sur 4m Teleferner area, 4427-ac lse, abnd 5006 ft.

LOWER TEXAS COAST OUTPOST

Jim Wells County—Gallagher Failure: M. M. Miller & Sons' W. T. Machen Est 2, 840 fr sel 650 fr nl blk 60 J. B. Dibrell subdvn Wade rch on 397-ac lse, Casa Blanca Gr A-296 (OWDD) 2000 nne of Gallagher 4, otd 5258 ft, abnd 5578 ft.

TEXAS GULF COAST WILDCATS

Brazoria County—Failures: Humble's Houston Farms Dev. Co. 4, 1604 w fr s cor Perry & Austin sur A-106 7000-ac lse, Rattlesnake Mound area, abnd 11,502 ft.

Humble's E. W. Van Tyen 1, 660 fr sw&se lot 1, and 242-ac lse 660 nw of s cor lot 2 on line between lots 1 & 2, D. Shipman & J. W. Charles sur A-128, blk 4, abnd 7144 ft.

Burleson County—Failure: Hamman O&R Co.'s Dollie Pollock Worthington-Henry Worthington 1, 330 fr nw&swl 56.7-ac tr out of 239-ac lse, B. A. Porter sur, elev 300 ft, abnd 2534 ft.

Ft. Bend County—Failure: Magnolia's Dew B-1, 330 fr s&wl B lse, 200-ac tr, D. Bright sur, 6 mi se Sugarland, abnd 7513 ft.

Jefferson County—Failure: Butcher-Arthur et al's 660 fr n&wl 780-ac lse and sect 69 T&NO sur A-215 ft, elev 54 ft, abnd 9005 ft.

Wharton County—Failure: Salt Dome et al's T. P. Jones 1, 1320 fr wl 1900 fr sl 503.5-ac lse, S. P. Middleton sur A-269, abnd 5828 ft.

EAST TEXAS BORDER COUNTIES WILDCAT

Shelby County—Failure: Ce-Beth Oil Co.'s J. M. Smith 1, 1850 fr nel 1150 fr nwl H. McKelvie sur, 5 mi n of Center, elev 297 ft, Winona 2350 ft, Trinity 2550 ft, upper Glenrose 3710 ft, James 5910 ft, Pettit 6205 ft, abnd red shale 6940 ft.

EAST TEXAS WILDCATS

Ellis County—Failure: Lesco, Inc.'s R. S. LeSage 1, 550 ft fr nwl 3372 ft fr swl E. D. Harrison sur, elev 722 ft, base Woodbine 1100 ft, Paluxy 1325 ft, Paleozoics 2520 ft, abnd 2880 ft.

Houston County—Failure: J. O. Fox and Chas. A. Neal's Woodward 1, 809 ft ewl 330 ft nsl J. W. Saxon sur, elev 312 ft, abnd 2175 ft.

Titus County—Failure: Humble's Stevens 1, 5500 ft ewl 3350 ft nsl Geo. Clapham sur, elev 393 ft, Pecan 2387-2830 ft, Austin 3619-3662 ft, Woodbine 4090 ft, Georgetown 4470 ft, Goodland 5364-5428 ft, Paluxy 5443 ft, Massive anhydrite 6900-7090 ft, 1st Rodessa porosity 7212 ft, Travis Peak 7800 ft, abnd 8143 ft.

NORTH TEXAS WILDCATS

Archer County—Failures: G. E. Kadane & Sons-Sunray Oil Co.'s Coleman 1, 330 ft out nec lot 2, blk 81, John Kelly sur A-243, Ellenburger 5700 ft, abnd 5755 ft.

Fortex Oil Corp.'s Lulu Ikard 1, 1000 ft nsl 200 ft ewl of 284-ac tr, Jos. Levins sur A-260, abnd 1059 ft.

A. R. Dillard and Frank Wood's Zane Cetti 1, 700 ft snl 1200 ft wel S.P. Ry. sec 1, A-417, abnd 1608 ft.

Texas Co.-Bridwell Oil Co.'s Oil Investment Co. 5, 3001 ft snl 1280 ft wel blk 126, J. W. Harris subdvn, elev 971 ft, lime 4931 ft, Ellenburger 5385 ft, abnd 5462 ft.

Cooke County—Failure: Texas Co.'s Hildebrand 1, 530 ft nsl 1090 ft wel of P. Trevino sur A-1015, abnd in granite wash 4329 ft.

Denton County — Failure: Northern Ordnance's Light 1, 1130 ft fr m/e/wl 3284 ft nsl of C. Fleisner sur A-431, elev 592 ft, Trinity sand 909-1147 ft, Ellenburger 3692 ft abnd 3828 ft.

Grayson County—Failure: Seitz-Comegys & Seitz's Vaughn 1, 330 ft out sec of 200-ac tr, se part Sarah Shoto sur A-1079, Simpson 4423 ft, Ellenburger 4848 ft, abnd 5008 ft.

Hardeman County—Failure: Humble's Marshall 1, 1927 ft nsl 660 ft ewl of W&NW Ry. 240, blk H, elev 1555 ft, light oil show in granite wash 6000-10 ft, abnd in Arkrose 6675 ft.

Jack County—Failure: Northern Ordnance's

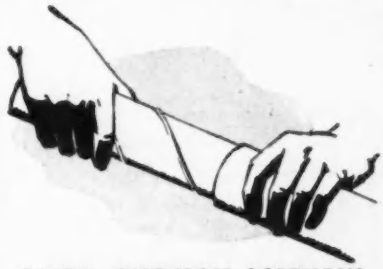
SPIRALOK

. . . the only full length threaded cartridge with double protection

DOUBLY COVERED FOR EXTRA STRENGTH. The column of explosives is doubly covered—first, by a strong, rigid shell—secondly, by an equally strong sleeve.

GREATER RIGIDITY MEANS EASIER HANDLING

Spiralok sleeves screw tightly against one another, leave no gaps or exposed cartridge areas. This *continuous* reinforcement gives the entire column greater strength and rigidity for easier handling.



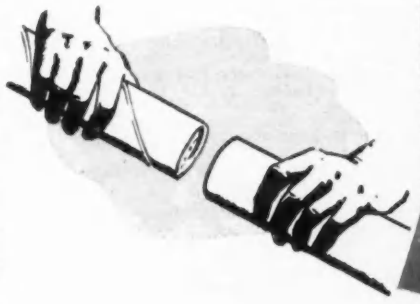
QUICK, ONE-MAN ASSEMBLY

Spiralok's threaded cartridge and grooved sleeve are screwed together quickly, easily, like a nut on a bolt. One man can assemble a long column of explosives in a matter of a few minutes.

THREADED FOR STRENGTH

A threaded Spiralok cartridge and sleeve will withstand the straight pull of two men. It is virtually impossible to pull them apart. Yet, they are easily separated by unscrewing.

SIMPLEST OF ALL TO TAKE APART. One man can quickly remove any number of unneeded cartridges without damage to either charge or sleeve. The removed cartridges can be reassembled whenever desired.



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ED-44

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935 KING STREET · WILMINGTON 99, DELAWARE

Pettus 1, 330 ft out nwc se¼ of R. Murkerson sur A-442, Palo Pinto 875 ft, abnd 3253 ft.

Throckmorton County—Oil Discovery: Panhandle Ref. Co.-Anderson-Prichard Oil Corp.'s W. B. Ewalt 1, 1500 ft snl 467 ft ewl sec 2170, TE&L Co. sur, Palo Pinto 2506 ft, Bend 4152 ft, Mississippi 4725 ft, Chester 4740 ft, Chappell 4755 ft, flow 200 bbls in 2½ hrs via ¾-in for 1½ hrs and ½-in for 1 hr, 1000 gals acid Bend 4156-61 ft, td 5034 ft.

Wichita County—Failures: C. A. Reid et al's Cullum-McFall 1, 1850 ft wel 150 ft snl of sec 3, BBB&C Ry. sur A-332, abnd 694 ft.

Akin-Dimock et al's Honaker 1, 1877 ft ewl 1167 ft snl Richard Meade sur A-185, abnd 2108 ft.

Young County—Failure: Standard of Texas-Hanlon & Buchanan's Sallie Donnell 1, lse 1, 467 ft ewl 1400 ft snl TE&L Co. sec 2377, Ellenburger 4772 ft, abnd 4803 ft.

NORTH TEXAS NEW PAY TEST

Jack County—Bryson: Brazos River O&G Co.'s Van Hooser 1, (OWDD), 660 ft out nwc 200-ac tr, Jacob Veal sur A-889, otd 2826 ft, Bend 4100 ft, abnd 4505 ft.

United States Wildcat Starts

ARKANSAS

Lafayette County: Tide Water-Seaboard Oil Co.'s J. N. Landis 1, c sw ne 4-15s-25w, lcn.

CALIFORNIA

Kern County: Tide Water's Cohn 62, ne ne 14-30-28, Mt. View area outpost test, rig.

General Pet. Corp.'s Larkin 1, ne ne 10-28-28, Round Mt. area, lcn.

General Pet. Corp.'s Tarbino 2, ne nw 5-29-29, Round Mt. area, lcn.

Standard Oil Co.'s K.C.L. 23-41, ne nw 6-30-26, Strand area, lcn.

Standard Oil Co.'s M. Metzenbaum 34-4, se nw 34-11-19, Tejon area, lcn.

Los Angeles County: Wilshire Oil Co.'s Central Heights 1, se sw 21-3-13, Rosecrans outpost test, lcn.

Solono County: Shell's Lambie A-1, 25-4n-1w, gas test, lcn.

ILLINOIS

Crawford County: Sohio's Lownsend 1, sw sw nw 7-5n-13w, dr 133 ft.

Fayette County: F. E. Webb's Mueller 1, se nw se 2-4n-1w, dr.

White County: J. H. Gilliam et al's Pearson Est. 1, sw se se 14-4s-9e, lcn.

KANSAS

Ellis County: El Dorado Rfg.'s Gunther 1, nec nw 9-11s-19w, rur.

McPherson County: Cummings' Carey 1, se sw sw 16-17s-2w, rur.

Reno County: Stanolind's Goertzen 1, swc 12-22s-5w, lcn.

Rice County: Wolf Creek et al's Kratzer 1, se se ne 22-19s-7w, dr 125 ft.

Lauck & Moncrief's Sieverburg 1, nw sw se 17-19s-10w, dr 150 ft.

Russell County: Coralena Oil's Alley 1, se sw ne 29-14s-15w, c&p.

Saline County: Phillips' Ryan 1, ne ne se 17-14s-1w, lcn.

Stafford County: Phillips' Vivian 1, ne ne se 12-23s-12w, lcn.

KENTUCKY

Caldwell County: Hobard Crider's McChesney 1, 11-I-19, lcn.

McLean County: Ryan Oil et al's Bahannon 1, 12N-26, lcn.

Union County: Hiawatha Oil's Waller Est. 1, 25-O-20, lcn.

NORTH LOUISIANA

Bossier Parish: O. F. Shaver's W. M. Brown Fee 1, 200 s 330 w of nec nw nw 8-23n-11w, lcn Nacatoch test.

LaSalle Parish: Placid Oil Co.'s Tremont Lumber Co. F-2, c se nw 28-9n-2e, lcn 5000-ft test.

Morehouse Parish: Texas Co.'s Annie E. Kimball 1, 1980 fr el 660 fr sl 3-23n-9e, dr 1488 ft in shale.

SOUTH LOUISIANA

Acadia Parish: Sun's Estherwood Townsite Unit 1, s 8° 45 mins w 4682 and s 81° 45 mins e 532 fr nwc 50-10s-1w, lcn 11,600-ft test.

Iberville Parish: Humble's E. B. Schwing et al C-1, start nec sw¼ sect 18 go sly alg el sw¼ 660 th wly at ra 660 in 18-10s-11e, Bayou Goola area, lcn 12,000-ft test.

Jefferson Parish: California Co.'s E. P. Brady et al 1, begin USCGS Station Perot go n 80° 56 mins e 6233 to lcn in 2-16s-23e, reinstated 11,000-ft test, moving barge.

MICHIGAN

Arenac County: Lowell Bernhardt's Mutch 1, se ne nw 1-19n-3e, lcn.

Kent County: S. L. McCall's Rector 1, ne se se 24-9n-11w, dr.

Isabella County: Rayburn and Atha's Bush 1, sw se se 24-13n-3w, rig.

Mecosta County: Sohio's Consumers C-1, n½ sw sw 12-16n-10w, dr.

Ottawa County: C. A. Perry's Wesseldyk 1, ne ne ne 24-16n-15w, rig.

Voorhees' Nagelkirk 1, ne se sw 20-5n-14w, dr.

Roscommon County: Sun's Resort C-2, s½ ne sw 27-22n-2w, lcn.

MISSISSIPPI

Holmes County: Fisher Drilling Co.'s W. M. Thompson 1, se se 24-14n-2w, lcn 6500-ft or Massive test.

OKLAHOMA

Jefferson County: Bridwell Oil & Gas Co.'s Smart 1, se se nw 13-7s-8w, lcn.

Bridwell Oil & Gas Co.'s Trout 1, se sw sw 32-7s-7w, rur.

Logan County: Fox & Fox's Tontz 1, ne ne 32-17n-3w, rur.

McClain County: Carter's McBride 1, se nw 9-7n-3w, lcn.

Murray County: Continental's Butterly 1, nw sw se 14-1n-1e, lcn.

Okfuskee County: Public Service's Palmer 1, sw se nw 4-10n-10e, woc 156 ft.

Pawnee County: Continental's Meyerdirk 1, sw ne nw 10-22n-5e, woc 221 ft.

SOUTH DAKOTA

Fall River County: Bell Oil Co.'s No. 1, nw nw se 8-8s-3e, Red Canyon, spud 2000-ft Minnelusa test.

WEST TEXAS

Andrews County: Magnolia's Jos. Martin 1, c ne ne PSL 13, blk A-47, 2¼ mi n by w of prod, lcn 8000-ft Ellenburger test.

Crockett County: Lesco, Inc.'s University-Gulf 9, nw sw nw sec 17, blk 14, lcn 3000-ft new pay test for Crockett field.

Howard County: Bond Oil Corp.- L. C. Harrison's Texas Land & Mfg. Co. 2-B, ne ne se T&P Ry. 8, blk 30, T-1-S, lcn 4250-ft new pay test for Iatan-East Howard field.

Martin County: Amon G. Carter et al's E. W. Hyatt 1, 4417 ft snl 8346 ft ewl Lge 247, Hartley CSL sur, lcn 6500-ft test.

Midland County: Richfield Oil Corp.'s A. S. Boone 1, c se T&P Ry. 44, blk 36, T-2-S, lcn 4500-ft test.

Tom Green County: Texas Co.'s R. F. Gorman 1, 1986 ft snl 660 ft ewl S.P. Ry. 85, Dist. No 11, rig.

Val Verde County: J. A. Green et al's John Ingram 1, 1480 ft ewl 320 ft snl E.L. Ry. 73, blk S-2, lcn 4500-ft cable test.

WEST CENTRAL TEXAS

Coleman County: Maguire Industries' J. P. Morris 2, 330 ft out nec sw nw sec 4, W. D. Roddan sur, lcn 3850-ft rotary test.

Fisher County: Hunt Oil Co.'s W. P. Bomar 1, 1980 ft ewl 919 ft snl of lot 6, John Rector subdvn of Thomas H. Cosby sur 315, mim for 6000-ft Strawn test.

Shackelford County: R. H. Roark et al's W. H. Green 1, c nw se T&P Ry. 47, blk 11, lcn 4700-ft cable test.

Taylor County: Geochemical Surveys et al's W. D. Haynes 1, 330 ft out nec lot 5, Henry Sayles subdvn of n½ Lge 122, W. R. Willis sur, lcn 2800-ft cable test.

Texas Co.'s Henry Sayles 1-C, offset to Lewis' Teaff 2, abnd 3206 ft, lot 9, n½ Lge 122, W. R. Willis sur, dr 987 ft.

SOUTH CENTRAL TEXAS

Atascosa County: P. G. Northrup's Thornton Stevens 1, 1980 fr nl 660 fr wl I&GN sur 1747, 4 mi sw of Verde, lcn 1500-ft test.

Guadalupe County: Wiegand Bros.' Paul & Emma Baumert 2, 1000 se No 1, 330 fr swly swl 1330 fr nwl 227-ac lse, M. Besore sur, dr 2150 ft.

SOUTHWEST TEXAS

Duval County: Taylor Ref. Co.'s A. Parr F-2, 1650 fr sl 330 fr el sur 113, 360-ac lse, 6 mi sw of San Diego, lcn 6000-ft test.

Jim Hogg County: F. B. Lefevre's A. Martinez et al 1, 330 fr nl 330 fr el blk 21, 240-ac lse, Las Animas Gr blk 19 of subdvn of sh 2, lcn 2000-ft test.

Starr County: W. W. Zimmerman's Mary Hedley Edgerton 1, 637 fr wl 240-ac lse and blk 11, 330 fr nl blk 11 (40-ac) Proc 80 sur 66, 10 mi n of Rio Grande City, elev 335, lcn 1500-ft test.

Zapata County: A. M. Lacey's Carlos Vela et al 1, 330 fr nwl 330 fr swl 2568-ac lse, porc 21, lcn 6000-ft test.

LOWER TEXAS COAST

Bee County: Luling O&G Co.'s W. E. Ruckmann 1, 467 fr sw&nely swl of 565-ac lse 3107 fr swl 467 fr sel J. J. Sanchez sur A-296, lcn 6500-ft test.

Brooks County: Sun's C. Boedeker C-1, 1010 fr nl 1300 fr m/wly/wl 416-ac lse, CCSD&RGNG sur 9, 16 mi s of Falfurrias, lcn 7000-ft test.

Jackson County: W. D. Craig's L. R. Hollingsworth 1, 1238 fr swl 2106 fr sel 4430 fr nel 1280-ac lse, Eli Mercer sur A-54, elev 92 ft, lcn 5000-ft test.

Sterling O&R Co.-Stewart Boyle's H. A. Meyer 1, 550 fr el 620 fr nl 100-ac lse, Sutherland sur A-75 sec 5, lcn 5200-ft test.

Jim Wells County: H. H. Howell's D. C. Perkins et al 1, 467 fr w&nl 80-ac lse, Los Presenos Gr, sur 5, lcn 6000-ft test.

Lavaca County: Sterling O&R Co.'s Seckamp & Palmer 1, 660 fr e&nl 160-ac lse ctr of ne 40-ac of 160-ac, elev 179 ft, lcn 10,000-ft test.

TEXAS GULF COAST

Chambers County: Sinclair Prairie's G. R. Bauer 1, 660 fr s&el T&NO sur A-502 and sect 79, 772-ac tr, lcn 9000-ft test.

Colorado County: Sinclair Prairie's Tulane Gordon 1, 660 fr n&wl Peter Piper sur A-466, New Ulm area, 100-ac tr, 4375 ssw of Thompson 1, lcn 10,500-ft test.

Liberty County: Gulf's B. E. Quinn C-1, 1267.6 w 800 n of nec of T. E. Foster sur A-929, sect 158 in T. Humphries sur, South Cleveland area, 3426-ac lse, lcn 12,000-ft test.

Shell's Grogan Mfg. Co. et al 1, 1011 s 2500.6 w of swc Shell's Jacob Cherry lse, Clayton Harper sur A-249 380 n of nl of J. G. Puterbaugh sur, elev 160 ft, lcn 12,250-ft test.

EAST TEXAS BORDER COUNTIES

San Augustine County: E. M. Davis' Thomas 1, 660 fr n&wl 120-ac tr and Wm. Horn sur A-142, lcn.

EAST TEXAS

Bowie County: J. K. Hughes Oil Co. et al's J. R. Howard 1, 330 ft ewl 990 ft snl of 48-ac tr, 2100 ft wel 2050 nsl of J. H. Dyer sur, mim.

Ellis County: Lesco, Inc.'s R. S. LeSage 2, 330 ft out swc 80-ac, 2320 ft snl 330 ft wel of Hugh Lucky sur, 6 mi ne Pluto, lcn 4000-ft test.

Robertson County: W. H. Doran et al's Fogle-Woodall 1, 1850 ft wel 330 ft nsl of 1200-ac tr 3150 ft snl 3600 ft nsl of L. Purdy sur, dr 315 ft.

NORTH TEXAS

Archer County: M. J. Delaney & Co.-Guy J. Brown's T. J. Dempsey 8, 990 ft nsl 330 ft wel blk 10, Lge 3, Denton CSL sur, East Holliday new pay test, lcn 5300-ft Ellenburger test.

Clay County: Fain-McGaha Dr. & Exploration's Ross Hrs. 1, 430 ft wel 1800 ft snl BBB&C Ry. sec 7, A-49, Ross field outpost, lcn 5800-ft test.

Lt. Burns et al's J. Gilbert 2, 167 ft ewl 330 ft snl of C. Thompson sur A-445, lcn 6000-ft Ellenburger test.

W. T. Jones et al's R. P. Henry-C. L. Estep 1, 150 ft snl 1150 ft wel blk 62, Byers subdvn, lcn.

Stanolind's C. A. Gray 1, 440 ft out sec n½ sec 2801, TE&L Co. sur, 2 mi s Bellevue, lcn 7500-ft Ellenburger test.

Cooke County: Texas Co.'s Gainesville Nat'l Bank 1, 330 ft out nec lse 1500 ft nsl 7500 ft wel of T. W. Ward sur A-1089, lcn 6500-ft Ellenburger test.

Jack County: Panhandle Ref. Co.'s J. W. Kinder 1-D, 467 ft out nwc B. H. Epperson sur A-208, lcn 5500-ft Ellenburger cable test.

Ralph Harper et al's S. Castleberry 1, 330 ft out nwc se¼, E. M. Sanders sur A-534, lcn 3500-ft test.

Motley County: Humble's Matador Land & Cattle Co. 2-B, 660 ft out nwc sec 44, blk M, Matador Cattle Co. sur, rig for 8000-ft Ellenburger test.

WYOMING

Carbon County: Sinclair Wyoming's Kaufman 1, se ne ne 21-26n-89w, Bailey dome, rig Tensleep test.

Tank Car Relaxation

ODT restrictions on the use of tank cars in eastern service were relaxed September 25, when General Order 7 was revised to eliminate the requirement for permits to use small cars and reducing from 200 to 100 miles the minimum distance for which tank cars may be used without special authority.

While railroads continue to haul as much oil as in the past, movements are changing due to greater use of marine and pipe line facilities, shortening the rail hauls and easing the tank car supply, it was said.

☆

JOEL C. OTT has been promoted to district superintendent in charge of Humble Oil & Refining Company operations in the Bayou des Glaise District, Louisiana Division.

V. R. OAKLEY, former general superintendent of the Bareco Oil Company, has been elected a vice president and will be in charge of the company's manufacturing division.

Squeaks from the Bull Wheel

Kind Lady

She: "I've lost so much weight you can see all my bones sticking out."
He: "Gee, thanks."

Beauty on High

It's all right to tell a girl she has pretty ankles, or even legs, but don't compliment her too highly.

Overdoing It

A Negro preacher stopped a young sinner in the middle of his confession: "Son, you ain't confessin'—you're braggin!"

Definition

A bank is an institution where you can borrow money—if you can present sufficient evidence that you don't need it.

This Curious World

To get along in a big city, a girl must cross the streets cautiously and her legs recklessly.

Cold Water

"Tell me," she cooed at the artist, "do you ever do anything in the nude?"
"Yes, madam. I occasionally take a bath."

Goodbye, Mr. Whiskers

"Is your daddy home, sonny?"
"No, sir. He has'nt been home since mama caught Santa Claus kissing the maid."

Sad Fate

The salesman arrived home to find his cook had left without notice, a letter from his company told him he was fired, and his wife had strayed off with another man.
He knew a shot would end it all—so he opened the bottle and took one, by golly.

The Poet's Nook

There was a young WAVE named
Banker
Who slept while her ship was at anchor
She awoke in dismay,
When she heard the mate say:
"Lift up the sheet and spanker!"

Those People Again

Adam and Eve were the first systematic storekeepers. Didn't they introduce the loose leaf system?

Dogpatch Style?

Pa: "It's 2 a.m. Why doesn't that young man go home?"
Ma: "Now, father. Remember how we used to court."
Pa: "What! Where's my shotgun?"

Patience Pays

"Your dog likes to watch you cut hair, doesn't he?"
"Oh, it ain't that. Sometimes I snip off a piece of ear."

Doesn't Take Long

"Doc, if I take this castor oil, will I be well enough to get up tomorrow morning?"
"Sure—long before morning."

Tch, Tch

C.O.: "Who brought you here in this disgraceful condition?"
Pvt.: "Two MPs, sir."
C.O.: "Drunk, I suppose?"
Pvt.: "Yes, sir, both of them."

There's a Reason

An earnest young soldier reports that he joined the army for three reasons: "First, I wanted to fight for my country. Second, I knew it would build me up physically. Third, they came and got me."

Turnabout

At 2 o'clock in the morning a lady telephoned the president of a large department store.
"I just couldn't help calling you personally," she said in a syrupy voice. "I want you to know the hat I bought at your store last week is simply stunning."
"That's fine," he yawned, "but do you mind telling me why you call me at this hour of the night about a hat you bought last week?"
"Because," she snapped, "your truck just delivered it!"

Time-Saver, Too

"How about a ride in the country?"
"I haven't much time. Let's just run out of gas here in town."

The Simple Life

"What do you think of government ownership of industries?"
"I'm for it. When the government owns everything, it will have to pay all the taxes itself."

Small Doses

The patient was getting better. He had asked repeatedly for food and finally the nurse served him a mere spoonful of rice.
"That was wonderful," he said as he finished. "Now bring me a postage stamp. I want to read."

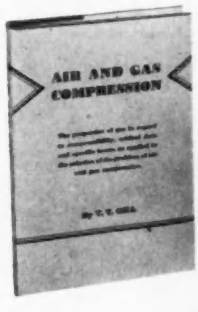
☆

LEO D. WELCH has been elected treasurer of the Standard Oil Company (New Jersey), effective October 16, succeeding J. E. Crane, who has been named a director of the firm.

G. GRAY SHAPLEIGH, for 7 years a Louisiana-Mississippi district geologist for Tide Water Associated Oil Company, with headquarters at Houston, has resigned to open offices in the Esperson Building, Houston, as a consulting petroleum geologist and engineer. Prior to joining the Tide Water organization, Shapleigh was for 11 years district geologist at Shreveport for The Texas Company.

MERLE BLAKELY, former Texas and Oklahoma newspaperman, has joined the public relations staff of The Carter Oil Company in Tulsa. For the past 5 years Blakely has been assistant director of public affairs for the Public Service Company of Oklahoma.

AIR AND GAS COMPRESSION



By
Thomas T. Gill
Union Oil Company of California

Applies the results of recent researches in the properties of gases—especially in regard to compressibility, critical data, and specific heats—to the solution of the problems of air and gas compression.

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Notes for the Equipment Buyer and User

Power Pump

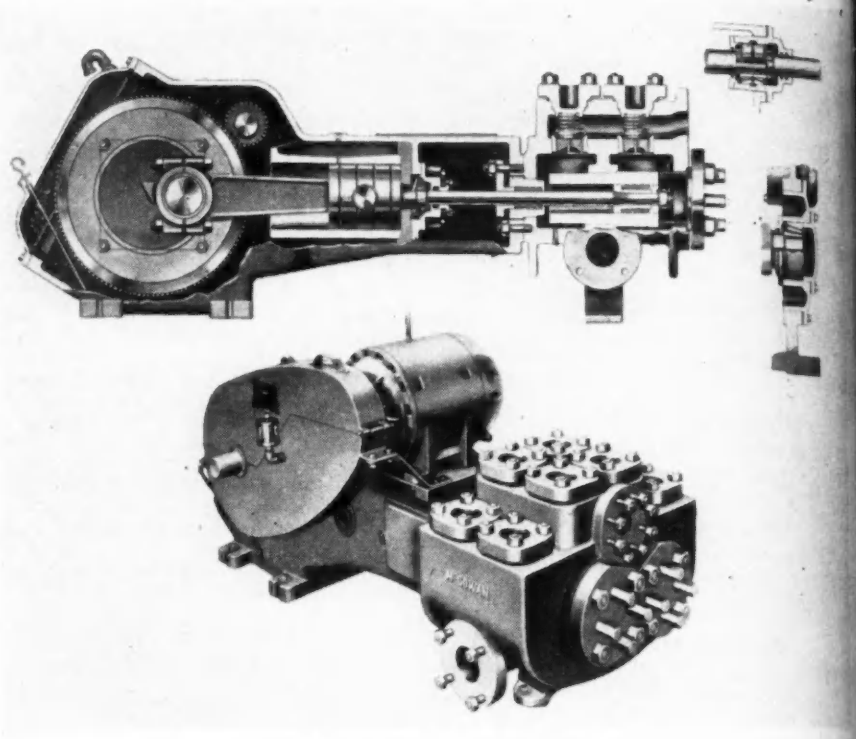
McGOWAN PUMP DIVISION

McGowan Pump Division of The Leyman Manufacturing Corporation, 44 Central Avenue, Cincinnati 2, Ohio, has developed a heavy-duty power pump, designed and engineered for dependable oil service.

The power frame is heavily-ribbed iron casting; the liquid end is made from fine grained, controlled cast iron. Gears are continuous-tooth herring bone, and pinion is forged integral with the shaft, which extends to both sides for connection to driver. Pinion shaft floats on double row Timken roller bearings while the crankshaft also turns in Timken roller bearings. Crank bearings are adjustable by means of shims, and this cap does not support the weight of the bearings, the crankshaft and gear, as these are supported in a separate housing, purposely made larger for easy insertion of these moving parts. Consequently this pump is easily dismantled.

The liquid piston rod can be removed from the back of the crosshead by removing piston-rod cover and stuffing box in the power frame.

The liquid end is a duplex side-pot type with a suction on either side. The valve areas are ample and pot caps are sealed with metal-covered gaskets, the same construction as used in cylinder heats. Liners are removable. Liquid ends of these models are available in commercial alloys depending upon requirements.



McGowan Power Pump

National Tube to Acquire Tubular Alloy Steel Firm

National Tube Company, United States Steel Corporation subsidiary, has completed arrangements for acquisition of Tubular Alloy Steel Corporation, Gary, Indiana, which will become an operating division of National Tube Company on October 1.

Operation of Tubular Alloy Steel Corporation in Gary started early in 1942 to increase production of seamless tubing of alloy steels. In becoming established as an independent United States Steel Corporation subsidiary, Tubular Alloy operated equipment owned by the Defense Plant Corporation, using the plant site and buildings which had been acquired from National Tube Company. The move does not change the existing arrangements with Defense Plant Corporation, which continues to hold title to the mechanical facilities and other equipment.

Leo J. Mason, vice president of Tubular Alloy Steel Corporation, will be in charge of the Tubular Alloy Steel Division and will retain his headquarters in Gary.

Subsidiary Organized By Jones and Laughlin

Jones & Laughlin Steel Corporation has organized under the laws of Delaware a subsidiary known as Jones & Laughlin International Company to act as sales representative in Brazil.

Purpose of the new unit is to simplify business procedure in connection with shipments from the United States and also indicates a general intention on the part of corporations to intensify exports after the war.

W. K. Cox Promoted by Caterpillar Tractor

W. K. Cox, assistant sales manager of the eastern division of Caterpillar Tractor Company, Peoria, Illinois, has been named assistant general sales manager.

W. K. Cox

Cox joined the company in 1928 as a special representative in logging sales and turned to industrial and general sales work in 1932. In 1936 he was assigned to the advertising department and a year later returned to sales as assistant manager of the sales development division. He was named assistant sales manager of the eastern division in 1941 and became manager of that division in 1943.

William S. Ziegler, field representative for the company since 1929, and assistant sales manager of the eastern division since early in 1944, has been named sales manager.

F. D. Haberkorn, Texas and Oklahoma representative, has become assistant sales manager of the eastern division.

Goodrich Tire Manual Now Available to Civilians

The B. F. Goodrich Company, Akron, announces that its manual on the design and construction of pneumatic tires published for United States Army training schools is also now available to civilians.

The manual consists of 50 illustrated pages on the basic principles of pneumatic tire design including pictured descriptions of the role which each part of the tire plays in its operation and how tires are manufactured.

Measurements and other data on each of the important classifications of heavy duty military and civilian tires, and proposed load and inflation table for them are one of the features of the publication, together with tube, valve, flap and rim data.

To Make Steel

Carnegie-Illinois Steel Corporation, United States Steel subsidiary, announced that Lukens Steel Company, Coatesville, Pennsylvania, has been licensed to manufacture "Cor-Ten," corrosion-resisting high strength low-alloy steel.

New Insulator

United States Rubber Company, Rockefeller Center, New York, has developed a plastic called "Flotofoam" that weighs only one seventh as much as cork. Important peacetime applications are anticipated where insulation is required and where extreme buoyancy with minimum weight is to be considered.

Longer lived molybdenum steel sucker rods cut down the biggest maintenance item in pumping costs.

CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

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VS.
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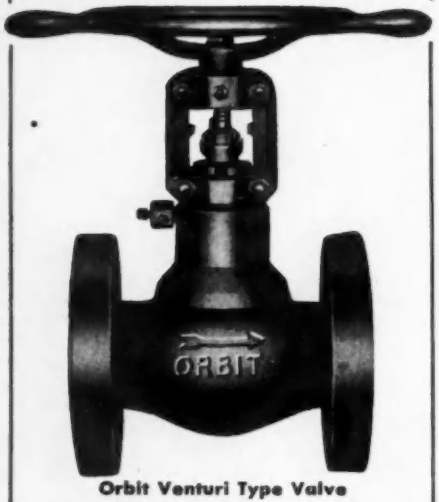
The **ORBIT VENTURI TYPE VALVE** is manufactured with Stellite "J" Metal Seats which will not only withstand the abrasion of sand but is also corrosion resistant to all types of crude oil.



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This valve can be furnished thru all fabricators of Xmas Trees or thru any of your local supply stores at a price comparable to that of leading plug valves **YET** this valve requires no lubrication to effect a seal.

See 1944 Composite Catalog

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EARL WESTWOOD SINCLAIR, 70, president of Sinclair Refining Company, died September 21 of a heart attack in New York. He was the brother of Harry F. Sinclair, president of Sinclair Oil Corporation.

LEO D. WELCH, vice president of the National City Bank of New York, will become treasurer of Standard Oil Company of New Jersey October 16, succeeding J. E. Crane, who recently was elected a director of the company.

JOHN S. WELLER, 78, president of Elk Petroleum Corporation, and member of the board of directors of Arkansas Fuel Oil Company and Tropical Oil Company, died September 26 in Pittsburgh, Pennsylvania. He was also senior member of the law firm of Weller, Wicks and Wallace, and a specialist in the laws governing oil and gas rights.

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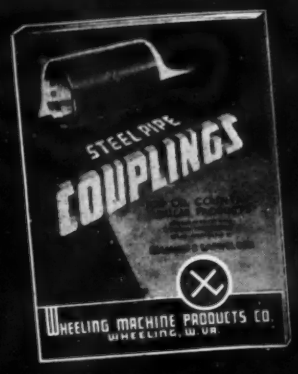

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